

The Green Book

Volume 26

A Work of Reference

Your Guide to Environmental Best Practice by companies, countries, councils and communities

www.thegreenorganisation.info

Including CSR World Leaders

Volume 8

A selection of International CSR Excellence Award-winning papers, demonstrating corporate social responsibility programmes at their best.

www.csrawards.co.uk



Published by The Green Organisation
Helping the Environment since 1994

First published: 2022

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Setting the standard...

The Green Book is the world's only international work of reference on environmental best practice.

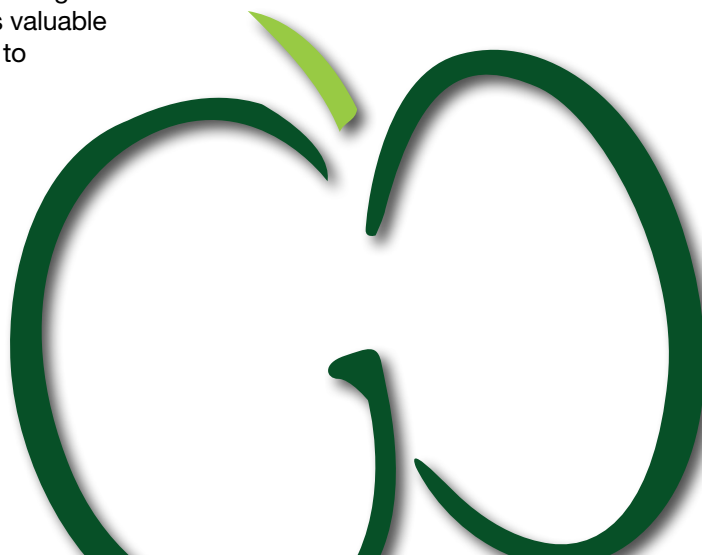
It is published by The Green Organisation in tribute to the environmental endeavours and generosity of our Green World Ambassadors.

These are the companies, councils and communities who have won Green Awards for their environmental efforts, and who have taken their commitment to the next level by helping others to help the environment.

They are assisting us in publishing their award-winning papers in The Green Book, and we distribute this valuable educational and informative guide free of charge to environment professionals all over the world.

By helping others to follow their environmental lead and learn from their experiences and successes, they fully deserve the title of Green World Ambassadors.

Not only do they allow us to publish their case histories, but they welcome any followup inquiries. Each Green World Ambassador has a contact name and number shown in the Index, and any of them will do all they can to help others help the environment.



Editor's Note

In the interests of accuracy, these Green Apple Award-winning papers are published here in their original form – basically as provided by the entrants.

As many of the papers are of a technical or specialist nature, it was decided that the experience and expert knowledge of the contenders should not be compromised by the grammatical priorities and

consistency of style that usually dominate the editing process.

Our priority is to communicate the aims, methods and achievements of our winners as they wish them to be presented. To this end, the contents have been only lightly edited and we ask for your tolerance of any grammatical shortcomings that might result.

INDEX

A

ALUMINIUM BAHRAIN(ALBA)

Towards Zero Waste Aluminium Smelting

Page 057

Finding a sustainable solution for the management of spent potlining material, which is the most significant solid waste produced by any primary aluminium smelters in terms of environmental impact, due to its hazardous characteristics was the primary aim of this project. Implementing a treatment solution that was suitable to the unique requirements of the Alba smelter eliminated the need to landfill any generated SPL material. Building and operating a dedicated SPL treatment facility, the first of its kind in the Middle East, served their objectives and significantly reduced their waste footprint. Additionally, the plant capacity has been designed to accommodate both the newly generated SPL as well be able to steadily consume the legacy SPL from landfill.

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ASELSAN ELEKTRONİK SANAYİ VE TİCARET A.Ş.

Zero Waste Project

Page 062

As an environmentally conscious and pioneering company, ASELSAN has implemented a ZERO WASTE PROJECT in order to prevent waste formation at source. Prioritising reuse, they collect wastes separately at source, and reduce the amount of waste being disposed of by ensuring recycling and recovery are paramount to their success. Office wastes are now separated for recycling.

ECEM GOZDE KARABULUT
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A

ASEZ KOREA

Greenship Network

Page 066

This Korean youth organisation has developed the Greenship Project to instil a sense of environmental stewardship in the next generation. A range of programs has been developed to promote the idea through networking and volunteer actions to thousands of youths around the world.

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ASEZ WAO

Greenship Workplace

Page 069

Through the Green Workplace Project, ASEZ WAO actively takes action to reduce greenhouse gases and combat climate change around the world. The aim of this project is to carry out 12 practices for one year and reduce a total of 589kg of CO₂, which is about 0.5 tonne of CO₂. Everyone taking part should turn off their computer monitor when not in use, Switch off the power strip, Use stairs instead of elevators, Use a reusable Cup , Turn off automatic taps, Use a washing-up bowl to reduce water use, Use public transportation, Ride a bicycle, Use reusable paper, Use your personal cup, Use a handkerchief instead of tissue and Clean out unwanted e-mails in your Mailbox. All of this is equivalent to planting 93 trees per person.

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A

ASHDOWN PHILLIPS & PARTNERS

Greenship Network

Page 072

The tangible, measured and audited reduction of Plastic & CO2e in our on-site cleaning delivery whilst removing hazardous substances and toxicity for the users and delivering the fastest biodegradability.

Ashdown Phillips & Partners provide a socially, environmentally and economically sustainable property management service. They believe they have a responsibility to have a positive effect - either by improving the environmental impact of each property; charitable work serving the communities they work in; or the wellbeing of their team and occupants.

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ASHGHAL

**Qatar's Public Works Authority "Ashghal",
Roads Projects Department (RPD)**

Page 075

Since 2019, Ashghal has had many notable environmental management and sustainability achievements that have led to a proliferation of best practices, independent sustainability initiatives and raising of sustainability awareness across Qatar. Their many initiatives added up to a 91,219 tonnes carbon emissions reduction in 2020 alone.

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B

BALFOUR BEATTY

**Inveraray to Crossaig 275kV Overhead
Transmission Line Reinforcement Project
Page 079**

Replacing the existing overhead power lines, for the increased capacity of power and to secure future connections, was the main objective here. Upgrading access tracks without detriment to the surrounding wildlife was paramount to the whole project along with pollution prevention and water environment protection. 100% biodegradable products were used throughout.

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BALFOUR BEATTY

**Islington Pumping Station
Page 082**

As age and climate change took their toll on the old pumping station, its necessary upgrade had to benefit wildlife as well as the local populace. Many novel and inspirational techniques were developed to achieve that and more, including a net increase in habitat and biodiversity while adding flood resilience for future generations.

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B

BALFOUR BEATTY

Use of an innovative soil stabilisation material to reduce the quantity of aggregate required on the project.

Page 086

Working on behalf of the National Grid project at Hinkley, Balfour Beatty needed to create a temporary compound in an unsuitable area. Rather than export the problematic rock and soil, and import graded material it was decided that making the substrate more suitable to their needs would be the more environmentally efficient approach. They were right, and created savings of near 150 tonnes of CO₂.

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B&H WORLDWIDE

Reducing Carbon Reduction

Page 090

B&H are well aware that they work in an industry that has the eco-spotlight focussed on it. They chose to do the same and found systems and procedures that have steered them to an amazing 50% CO₂ reduction in their head office. They are looking to continue this across their entire aviation business.

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B

**BHARAT ALUMINIUM COMPANY
LIMITED**

**Specific Power Consumption Reduction in
Potline - BALCO**

Page 094

BALCO have improved operational efficiency and reduced specific power consumption, thus reducing their carbon footprint. They are the lowest power consumer in Indian aluminium smelter and strive to achieve more on this front through innovation and technology.

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**BIOTEM TEMIZLIK EMLAK VE INSAAT
HIZMETLERI TICARET**

**Increasing the Environmental Awareness
Rate Focusing on Zero Waste Management
System and Environmental Business Model &
Recycling of waste materials**

Page 096

BIOTEM aims to be a company that achieves the goal of a better world and increases environmental awareness among its managers and employees. Between 2019 and 2021, a total of 360 personnel participated in 6 hours of Training on Environmental Awareness and Zero Waste applications with another 110 personnel within 6 months. They have created a reward system to achieve goals, such as to distribute 5% of revenue as a reward to successful Environmental Volunteer Employees.

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B

BIRMINGHAM AIRPORT

To Be Proud of Every Journey

Page 102

Their goal was to increase recycling to 65% and it has been achieved with initiatives such as partnering with charities to reuse abandoned baggage, clothing and buggies; donating surplus food to charities; and installing hydration stations to reduce the amount of single-use plastics generated from water bottles.

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BIZERBA (UK)

Organic Labels

Page 106

Bizerba have created an eco-friendly label solution for sustainable labeling of your products. Manufactured from organic raw materials, the organic film labels provide excellent adhesion even in most difficult ambient conditions and an outstanding print result ensures a high quality brand image too.

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B

BMMJV & ENVIRONMENT AGENCY

Boston Barrier

Page 108

Project successes have been monitored and evaluated against the United Nations Sustainable Development Goals (UN SDGs). Using the goals has enabled identification and implementation of savings in cost, carbon and time and the scheme has been found to contribute positively to all 17 goals. Going beyond physical protection from climate hazards, the Boston Barrier project is an example of how climate-adaptation projects can deliver wider social outcomes.

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BNP PARIBAS REAL ESTATE

Raising ocean health awareness internationally in 2019

Page 112

An environmental impact awareness and mitigation scheme in the heart of London has had a massive unexpected benefit for the people of the Philippines. BNP Paribas undertook the project to reduce the footprint of its Buckingham Palace Road offices which involved the General Manager visiting the Philippines to host an event there. This started a week-long cascade of events with the local media, mayor and emergency services all focussed on the importance of cleaning up plastics from the oceans.

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B

BOTAS

Enhancing Energy Efficiency

Page 115

Enhancing of Energy Efficiency at BOTAS As the primary public-sector energy provider for Turkey, BOTAS aims to be an exemplar of environmental best practice for the country. A recent efficiency project has seen them achieve the incredible, with savings across the board amounting to the equivalent of over 80,000 trees to date.

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BRIAR CONSULTING ENGINEERS

**Supporting Leicester City Council to
decarbonise its buildings**

Page 119

Briar enabled Leicester City Council to access government funding for a comprehensive schedule of decarbonisation works across a number of its public sector buildings, including 56 schools. The solar PV and heat pump installations for the sites will enable the reduction of carbon emissions and energy costs and the new energy efficient equipment, along with the improved building fabric and thermal performance will significantly reduce heating costs.

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C

CARDINAL

Virtual Reality Integration

Page 123

Virtual Reality has been around for a few years as an entertainment, but Cardinal are bringing maturity to the technology as they now use it to model new product design prototypes; saving the production costs and waste from creating real prototypes. This system significantly speeds up development, change-integration and signing off as well as considerable waste reductions inherent in the old method of production.

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CARNELL

**STONEmaster insitu recycling of
roadside filter drains**

Page 127

Roadside drainage typically utilises loose aggregate to allow water to pass into the ground and soak away. Over time this can become choked with silt causing highway damage and flooding, adding cost and risk. Carnell have created a system that cleans and redeposits the aggregate in a single pass, saving closures, waste and CO2 in the process.

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C

**CASACERTA ARCHITECTURE DESIGN
& BUILDING**

**Amazonian Timber Structures at
Cipem's Stand**

Page 131

CIPEM is the union of 8 forest based employer's unions, covering 100% of the wood producing municipalities of MATO GROSSO State in Brazil. They promote the productivity and conscious consumption of wood and forest based products in a sustainable way and are helping to preserve the Amazon Rain Forest.

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CAWARDEN

Summit Colliery
Page 133

Nature created a bespoke Habitat for the rare butterflies and plants at Summit Colliery, so a biodiversity solution to relocate was established and to this date has proved to be a big success. The translocated grasslands and hydro-seeded grasslands are now thriving and monitoring of the rare Dingy Skipper butterfly is ongoing and it's population is on the rise, which is most encouraging.

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C

CAWLEYS

Local recycling, global responsibility

Page 136

Cawleys intention was to divert waste from landfill through sustainable recycling and resource management. They built a state-of-the-art Materials Recovery Facility serving several company sites, and have diverted over 252,000 tonnes of recycling from General Waste to date.

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CBRE-SAVILLS

Waterless urinals install

Page 140

Good water management should always form part of any robust environment policy, and one area of high use is urinals, many of which are self-rinsing day and night with no relation to their use. CBRE invested in a waterless system that alone has saved near five million litres of water since installation.

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C

CBRE-TOWER PLACE

Tower Place-Waste & Energy Management

Page 142

Boosting the sites recycling rate, CBRE identified an opportunity to swap 2 compaction units, a 14 yard for a 32 yard one , saving more than twice as much product going for incineration. This alone has sustained increased recycling levels since 2018, year on year.

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**CHAMBERLAINE CLEANING
SERVICES**

Making a Difference – The Chamberlaine Way

Page 146

As the cleaning industry contributes a significant amount of environmental damage, from greenhouse gases to toxic chemicals and plastic entering the oceans, Chaimberlaine Cleaning adopted the DIVERSEY portfolio, reducing pollutants entering rivers, in turn reducing harm to aquatic life and the human food chain and reducing plastic waste by over 60%.

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C

COLAS

Colas Retread Lincolnshire County Council

Page 149

To drastically reduce CO2 emissions while resurfacing, Colas provided a carbon friendly road recycling process for Lincolnshire County Council. Known as Retread, heavily deformed, potholed and deteriorated carriageways were pulverised and re-used in situ, minimising disruption, waste and the cost associated with conventional resurfacing

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CRYSTAL LAGOONS

**Public Access Lagoons™: helping tourism
reduce its carbon footprint**

Page 152

Visiting natural beaches generate about 35 million CO2 tons per year, mainly from car and plane journeys. Public Access Lagoons™ projects, also known as PAL™ lagoons, bring the beach lifestyle to the city and the total carbon footprint can be reduced by more than 40% (nearly 14 million tons of CO2). City dwellers can access the beach by walking, biking, public transportation or by driving to the urban beach entertainment complex instead of having to take a plane to reach natural beach destinations.

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C

CWMBRAN CENTRE CBRE

Cwmbran Energy Management Plan

Page 155

This centre continues to evolve its industry-leading waste systems and they are now Zero to Landfill with over 64% of waste segregated on site. On top of this, Electricity, Water and Gas have seen huge reductions of 44%. They have also trained all occupants to “Switch Off”, but have still installed occupancy sensors and reducing flushing levels.

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DAEJAYON

**IGCAUS - Youth Environmental Club
Organization**

Page 159

Daejayon is an NGO composed of university students across the world. Their aim is to foster environmental leaders, green 20,000 university sites, and helping to regreen Earth through their “Green School, Green Campus, and Green World” ethos. Impact on such a large scale is impossible to quantify, but it is certain that their influence is both far-reaching and long-lasting.

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DARK SKY

Dark Sky® Alqueva: A Star Destination

Page 163

Pollution comes in many forms, and Dark Sky® Alqueva are doing what they can to deal with some of them. Alqueva is a region which covers an extensive area of almost 10.000 square kilometers around the Alqueva lake which is renowned for its stunning night time views of the cosmos. Dark Sky are not just ensuring light-pollution is kept to a minimum, but that any light is of the most efficient source.

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D

DHAFRA REGION MUNICIPALITY

Office Excellence Director

Page 165

The project includes preparing a safe haven for many wild animals such as deer and various birds and increasing local wild plants to the region after collecting the seeds and planting them in the empty lands in the desert between the borders of the forests and within the reserves, which depend on atmospheric humidity and seasonal rains for growth, which contributes to greening the desert at a very simple cost and does not require maintenance.

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E

EBSFORD ENVIRONMENTAL

Enviroscreen 2020

Page 169

Japanese Knotweed is a well known invasive species which can have devastating environmental and commercial consequences where it becomes established. Ebsford have developed a system that can treat this and other soil contaminants allowing reuse of the treated material on site instead of controlled transport to landfill, giving a multifaceted benefit to users of their system

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ECOSERV GROUP

**Reducing Environmental Impact &
Achieving Net Zero**

Page 173

Ecoserv have embarked on a multi-fronted initiative looking at all aspects of their business, but with a single aim – to cut carbon. They have talent for this as their program has removed many tonnes of CO2 by using electric vehicles, washable cleaning systems, eco-friendly products and packaging and paperless and renewables-equipped offices.

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E

EFFICIENT SERVICE DELIVERY (ESD)

Loch Ness Regional

Page 177

ESD were given the task of providing infrastructure to provide potable water from Loch Ness, and were determined to protect and enhance this magnificent environment despite the necessary works. They achieved this on many levels, including the reuse onsite of felled trees to provide habitat for the protection of local biodiversity.

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ELLENDALE ENVIRONMENTAL

**Sennybridge Primary School Woodland
Enhancement**

Page 181

During their work with Balfour Beatty in the Brecon Beacons, Ellendale chose to collaborate with a local school to give something back. They restored an area of woodland on the school premises, making it secure from dog walkers and adding fantastic new habitats and learning environments - showing the kids some of the little marvels they share the school grounds with.

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E

ENERGISE

RFU Energy Saving Programme

Page 183

When the Rugby Football Union chose to look at ways to reduce the CO2 footprint and financial expenditure of its member clubs, they chose to partner with Energise. This team scored well, identifying ways to reduce tonnes of CO2 and thousands of pounds through the adoption of modern energy-efficient equipment.

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ETIHAD RAIL

Etihad Rail Project

Page 186

Etihad Rail recognizes its role in promoting and supporting the nation's ambition of developing a vibrant and diversified economy based on long-term economic and sustainability strategies and commits towards establishing the environmental sustainability initiatives and objectives through the operation and development of UAE rail network in accordance with principles of sustainable development and recognise that the success of the organization is enhanced by environmentally, socially, and economically responsible business conduct.

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E

EUIPO

Reduction of EUIPO's environmental impact

Page 192

EUIPO fully understands and embraces its position and the need to be a role-model of environmental best practice. They sought to achieve this with a robust energy management system that has surpassed their own goals, achieving better than 70% savings in many areas.

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THE FLOORBRITE GROUP

Waste Management innovation & increasing sustainability awareness at ESB Carrington Power Station

Page 196

Since 2014 Floorbrite have offered far more to their clients than clean offices, they supply an all-encompassing waste management consultancy that has consistently provided huge CO2 and cost savings as exemplified with their work with Duo UK. Here they have achieved CO2 and financial savings in the thousands and zero to landfill.

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THE FLOORBRITE GROUP

Waste Management innovation & increasing sustainability awareness at John Hogg Mellor's Road Trafford Park Manchester M17 1PB

Page 203

As well as ensuring that we do our best at the centre, we also encourage our occupiers to do the same including green clauses in all new and reversionary leases. By engaging and developing these relationships we can create more comfortable and better managed buildings, improving the wellbeing of staff.

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G

GENQUIP

**Genquip-Groundhog Unisex Solar Hybrid Toilet
Page 207**

Genquip have developed a range of portable toilets utilising the latest ideas usually only found in fixed facilities. These Solar Hybrid Toilets offer huge reductions in fuel usage, carbon emissions and service schedules. These units are ideal for the ever increasing demands of the event and hire industry.

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**GOLDEN SQUARE SHOPPING
CENTRE**

**Recycle Your Household Metal Waste and Earn
£££ For Local Schools**

Page 211

This ingenious collaboration between Golden Square and EMR sees metal recycling in the spotlight. The aim was to promote metal recycling in the community, educate school children as to its importance, and use the funds generated to benefit local schools. It was a success on every front.

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GPS MARINE CONTRACTORS

Greenhouse Gas Emissions Savings on Thames Tideway Tunnel

Page 214

Excavated tunneled material was removed from site and taken to a suitable reuse site using 1750 tonne capacity barges utilising tidal power as well as engine power. From the initial programmed saving of ~90% emissions against HGV use a further 90% reduction in greenhouse gas emissions has been gained using biofuel in 2021.

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GREEN MOTION

Green Motion's Green Heart

Page 217

Green Motion have significantly reduced their energy and water consumption throughout their sites and show that they are leaders in the environment through their recycling and use of sustainable materials. They also enable customers to offset their carbon footprint by donating to their Green Heart Fee initiative.

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G

THE GREEN POOP BAG

Let there be light – The power of the Green Poop Bag

Page 222

Collecting dog waste may not be the most fun part of pet ownership, but it can be greener. The Green Poop Bag offers a fully non-toxic biodegradable bag made of plant materials which makes an ideal feedstock for home composting or biogas generation while avoiding the microplastics of standard biodegradable plastic bags.

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IC CESME MARINA

IC CESME MARINA ENVIRONMENTAL PROJECTS

Page 225

Marine ecosystems provide many resources that are beneficial to the world's population. We depend on oceans and coasts for survival and well-being. Ic Cesme are spearheading a number of marine projects to further encourage diversity in the marina and encourage other marinas in Turkey and around the world to follow suit. They have created 50 squid-nests within the marina and will build 30 additional nests in 2021.

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THE INCREDIBLE HUSK INTERNATIONAL GROUP

The Incredible Husk

Page 229

Agricultural waste is typically burnt, buried or dumped, yet it can be a very useful raw material. The people at Incredible Husk have developed a high quality packaging material that can replace many plastics, and at the end of its life it offers a third use as a highly effective fertiliser - essentially giving a closed loop system.

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INFOSYS

Annexure

Page 235

Infosys approached the carbon neutrality using a three-pronged strategy. 1) Energy efficiency (EE): Reduce emissions, to the extent possible, through EE measures 2) Renewable energy (RE): Avoid emissions transition to clean renewable source and 3) Carbon offsets: Offset emissions that are beyond their control using community-based offsets

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ISG

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Page 242

This project saw the development of a redundant fossil fuel power station into a logistics building of the future. The project team have strived to transform the development approach by going beyond minimum requirements, maximising community benefits, early adoption of low carbon approaches and improving the local environment through targeted biodiversity improvements.

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J

J TOMLINSON

Solihull Energy Centre – ground source heat pump installation

Page 246

Bromford Housing provides accommodation for over 55's in the Solihull region, but some of its housing is classed as "Hard-to-Treat" and rather inefficient. They teamed up with J Tomlinson and Vaillant to install ground-source heating in these tricky houses which have halved utility bills while adding comfort and removing a huge amount of CO2.

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JLL-CHURCHILL SQUARE

Green Travel Membership

Page 251

For many organisations, taking their green ideals beyond the office walls can seem problematic with the issues outweighing the benefits. Churchill Square however did their homework and found Easit - an organisation that negotiates significant discounts for greener commuting options, which now benefits more than 100 staff on site.

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J

JLL-FORTUNE POINT HOLDINGS

**Reduction in water consumption for 1
Kingdom Street building**

Page 253

As part of their policy to reduce utility use at the Fortune Place premises, JLL replaced their standard urinals with 45 waterless units. The work was completed with minimal disturbance to staff and has immediately generated incredible proven savings of four million litres per year.

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JOSEPH GALLAGHER GROUP

Review & Change

Page 255

The Joseph Gallagher Group has continually recognised that areas of their work have an impact on the environment and the world. In order to ensure continued improvements in sustainable practices they have committed to embedding the fundamentals of environmental and sustainability drivers into their modus operandi as a business.

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K

**KOREA ENVIRONMENTAL INDUSTRY
& TECHNOLOGY INSTITUTE**

**Consumer Information Program for
Sustainable Consumption and Production**

Page 258

It can be a struggle for consumers to get a real picture of how green their purchases may be, but eco-labelling can be a great help. To this end, KEITI have developed their own certification system that has been rolled out internationally and benefits suppliers and customers in making informed purchase decisions.

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LARSEN & TOUBRO

L&T HCI IC WDFC CTP 14

Page 260

The comprehensive waste management program with a net zero waste mission has many environmental benefits with respect to material circularity, carbon reduction through reduced disposal requirement and enhanced life cycle of material, local habitat conservation through rehabilitation of topsoil and prevention of degradation of land habitat through decrease land area requirement for disposal. Also, food waste is being disposed through Pig Farm as feed material and greatly ensuring the food chain balance. Comprehensive reuse of excavated soil, crushed waste concrete and other aggregates greatly support material linearity, reduced pressure on local virgin material demand and their avoiding their extraction. All of these activities have myriad positive impact in controlling pollution, habitat conservation, resource conservation & circularity of materials, and creating a balance in between developmental infrastructure work and environmental safeguard.

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LEGAL AND GENERAL INVESTMENT MANAGEMENT & JLL

**Weston Industrial Centre - grounds
maintenance**

Page 264

To enhance biodiversity and to engage with the public they planted a new Orchard, hand built a bug hotel, installed Hedgehog houses, allowed a large grass area to remain uncut as a semi wild area, sowed a native wildflower meadow, and planted six native trees.

MATT ROLLAUER

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M

THE MALL AT CRIBBS CAUSWAY

**Sustainability and innovation in Shopping
Centre Waste Management**

Page 267

The aim was to improve and develop innovative ways to manage waste and ensure the most cost effective and efficient solutions are implemented. The centre's priorities were; 1. to ensure that zero waste was going to landfill, 2. to introduce innovation to reduce the amount of waste leaving site. 3. Provide new solutions to deal with Coffee Cups and Coffee Grounds 4. To continuously improve recycling rates

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MARLEY

Crushed Recycled Waste

Page 271

Marley annually produces around 7000 tonnes of mineral waste that was transported from site for disposal. They opted instead to recycle this in-house and have saved close to 10k tonnes of CO2 per year as well as related costs, they are even looking to offer this service to other businesses.

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M

MHM PLANT

A Green Site Power Package - MHM solar hybrid system

Page 273

With the need to provide continuous power to a remote location for 3 years, MHM first looked at supplying a standard diesel generator, but further discussion led them to consider a solar hybrid system. This was the chosen route and it has yielded massive savings and reliability, reducing diesel use by over £50k per year and saving many tonnes of CO2

MEGAN RAND

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MILESTONE INFRASTRUCTURE

Science Vale Cycle Network, Route 1

Page 276

Milestone Infrastructure, working on behalf of Oxfordshire City Council and White Horse Vale District Council, were commissioned to rebuild a 6.5km cycle route to the estate. While the completed works would clearly aid green travel options, the working methods bolstered this through material reuse, and renewable energy systems across the project.

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M

THE MORGAN QUARTER

Year 1 - 9 - Delivering Electricity Consumption Reductions

Page 278

Over the past 9 years have strived to deliver reduced electricity consumption to the common parts in a highly complicated Grade 2 listed property. From 2012 to 2020 electricity consumption has been reduced by 50%. All staff are engaged in being responsible for helping in making these reductions and savings have been made.

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MORGAN SINDALL

VISTA

Page 280

When Morgan Sindall were commissioned to remove 11km of pylons and wires from some of Scotlands most glorious landscapes, they found the new underground cable routing would impact large numbers of sensitive animals and plants. By careful study and sensitive relocation of the affected lives they have brought impact to a minimum while restoring natural beauty to the area.

ANDY SKINNER

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M

MULTIPLEX CONSTRUCTION EUROPE

Net Positive Biodiversity

Page 284

The environmental efforts of Multiplex at the University of Glasgow have gone far beyond ticking boxes. The inclusion of a green corridor, SuDS technology and green roof and wall structures ably demonstrates their priorities and philosophy.

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N

NANOPOOL GMBH

Green packaging revolution

Page 287

Paper based laminated food packaging products have well documented recycling limitations and virtually no reuse potential. Nanopools liquid glass coatings are proven to buck this trend, providing packaging that is both reuseable and fully biodegradeable while also being highly effective and very low cost.

SASCHA SCHWINDT

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NATIONAL OILWELL VARCO

Environmental Enhancements at Gateshead

Page 291

Aiming to reduce their carbon footprint at their Gateshead site, National Oilwell varco has improved their recycling programs, reduce material usage and energy consumption along with undertaking a new conservation project, improving factory grounds for wildlife habitat and the installation of bird and bat boxes as well as insect housings.

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N

NAVTEK NAVAL TECHNOLOGIES INC.

Zeetug

Page 294

The Gisasa tugboat operators were looking to upgrade their fleet with smaller, more efficient tugs, but it was found that a hybrid option was not feasible. They asked Navtek to see if an all-electric boat was possible, Navtek found it was not only possible, but would reduce operational costs by 85% while removing 30 tonnes of pollution per boat per year.

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NI WATER

NI Water Innovation Pilot Plant System

Page 297

The Pilot Plant was developed to optimise new products that can be used to reduce THMs and problematic pesticides. This innovative approach requires 40% less chemical in the testing process, significantly reducing the amount of waste produced. It also allows NIW to identify the most sustainable products that can be incorporated into the overall treatment process to reduce chemical usage, reduce waste and in some cases promote chemical-free treatment.

TREVOR COUSINS

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N

NOVATI WITH ROADCHEF

Roadchef - Sustainability Matters

Page 301

Roadchef, under the guidance of Novati, are driving their sustainability efforts ever forward, and have become the first UK motorway services company to achieve zero to landfill. They have multistream recycling, plastic bottle return systems and the hugely successful “Keep It, Bin It” scheme, all achieved with minimal financial outlay and significant ongoing savings.

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NOVATI WITH TUI

TUI – Better Holidays, Better World

Page 305

With 439 UK outlets, TUI’s ambition to make their waste management more sustainable had many potential headaches. By teaming up with Novati they found a partner that is committed and able, that has already doubled their recycling efforts, removed over 6000 collection journeys and took their final waste figures below 1%.

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P

PARC TROSTRE RETAIL PARK

Encouraging Wildlife Through Nature

Page 308

They have introduced a wildflower garden to attract an increasing number of birds, butterflies and bees to the area. They have natural and manmade bird boxes, installed bug hotels and have also introduced bee hotels into the wooded areas to encourage new bee colonies.

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PGT-RECLAIMED

PGT-Reclaimed the Environment Warrior

Page 311

The company uses only reclaimed and FSC-certified wood. Their 500 workers export around 3,300 tonnes of high-class quality furniture each month to almost 20 countries. Last year, PGT-Reclaimed's factory was recognised as the 'model factory' for the furniture industry by auditors who judged the factory's cleanliness, environment for workers and sustainable practices, among other criteria.

YUNG BURDEN

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P

PREMIER CABS (BLACKPOOL)

Premier is Going Green!

Page 315

Premier Cabs removed ALL pure petrol and diesel vehicles from their fleet, replacing them all with either the Toyota Auris, Nissan Leaf or Nissan env-200. They installed a private network of rapid chargers around the town for the drivers. They have replaced and upgraded vehicles as they became tired, most having covered 100,000 to 400,000 miles before they are replaced. To date, they have covered over 15,000,000 pure electric miles.

NAKITA CUTLER

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PREZZO

A Recipe for Success

Page 317

In May 2020 Prezzo achieved zero landfill. From that date onwards, they have ensured that more than 99% (generally agreed definition of zero landfill) of their materials are Recovered or Recycled. Their Recycling rate has increased from 63% and now averages 70%. In April 2021 they achieved a phenomenal 80% recycling.

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QE FACILITIES

Energy & Carbon Reduction Commitment

Page 321

QE Facilities have been working with Gateshead Health NHS Foundation Trust to help lose 34% of their annual CO2 emissions, and, ideally, make financial savings too. This they have achieved to dramatic effect with almost 60 projects adding up to a near two thousand tonne CO2 saving with annual costs trimmed by almost £300k.

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R

THE RIDINGS CENTRE

Blooming Marvellous

Page 324

Management of The Ridings saw an opportunity to create a place for those who wanted somewhere to meet other people and grow their own produce in a safe and local location, especially the elderly and more vulnerable, in partnership with AgeUK by repurposing an unloved area of the centre. The local community now have a space of their own where like-minded people come together and share their experience.

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THE RIDINGS CENTRE

Waste Management - Ridings Centre- Wakefield

Page 327

The Ridings management and staff have a history of waste improvements over the years, and while many organisations find their efforts stall over time, these people continue to find gains. They have added 9 new waste streams, saved almost 2 million gallons of water, created a living wall and upped their overall efforts by a further 37%, or over 1000 trees.

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R

ROADBRIDGE

HS2 Sector C1 - Chiltern Tunnel South Portal

Page 330

The HS2 Phase One works in and around the Colne Valley are impacting many rural areas, including SSSI and AONB zones. Roadbridge, as part of the Align JV, is taking extra care to mitigate the works using low impact technology such as drone surveys and GPS location to inform operators when they are in or near sensitive habitats.

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S

SAUDI ARAMCO

Creating Carbon sinks through trees and mangroves

Page 333

Along with 197 other companies, Saudi Aramco has signed up to a United Nations convention to combat deforestation and desertification, an essential element towards “Sustainable Development Goals” In line with this vision and through the corporate strategic objectives of the company has implemented initiatives to re-balance the status quo. Planting mangroves provides a massive natural sink for carbon dioxide, this commenced in Aramco in 1993 and continues today and has also partnered with the National Commission for Wildlife Conservation and Development as well as the Ministry of Environment, Water and Agriculture.

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SAUDI ARAMCO

Optimization of reverse osmosis multimedia filters backwash resulting in reduced ground water consumption

Page 337

Saudi Aramco, along with other projects they have won today, are committed to the minimization of water consumption and maximizing less pressure on water resources for the integrity of the environment and sustainability. By promoting the use of alternative water resources and the use of renewable energy, a more sustainable water treatment and conveyance system can be put into practice. Further, the company is committed to protecting and restoring biodiversity and ecosystem services in operational areas. The company strives to achieve a net positive impact on biodiversity by avoiding, minimizing and restoring biodiversity and ecosystem services.

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S

SHARP CLINICAL SERVICES UK

Building for the Future

Page 342

In 2017 Sharp decided it was high time to relocate its UK headquarters to a larger building in which they had more control over its infrastructure. They moved from their rented premises into a fully owned unit of more than twice the size and added a raft of energy-efficient measures from the outset. This included the global companies first renewable power system which has since become a benchmark for all development since.

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**SINDH ENGRO COAL MINING
COMPANY**

Thar Green Drive

Page 345

As Pakistan moves towards water-scarce status, SECMC opted to be proactive industry leaders in mitigating the situation. They have started many environmental projects including planting a million trees in the Thar region, supporting Bio-Saline Agriculture and establishing the Bashir Ansari Green Park to promote further environmental initiatives.

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S

SRL PUBLISHING

SRL Publishing tree planting

Page 351

SRL Publishing only print what they sell, so have minimal wastage. A promise was made to the environment to never print copies up front, even though it damages profit margins. This has saved over 500,000 trees from deforestation, and since June 2020 they have been climate positive.

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T

TRIME UK

The Trime X-Solar Hybrid Lighting Tower

Page 353

Off-grid environments will sometimes need good night lighting, and this is traditionally supplied using diesel power. Trime wanted to update the available options and have created a lighting system that uses hybrid solar power that offers its users around 90% reductions in fuel and CO₂, while increasing reliability and reducing servicing costs.

PAUL HAY

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TOUCHWOOD-SOLIHULL

Industry leading accreditations at Touchwood

Page 357

Touchwood understands sustainability is imperative for economic growth, providing vibrant and resilient communities and cities and maintaining a healthy planet and people. Working in partnership with all interested parties Touchwood's environmental focus is on responsible management of all its resources and materials, climate action, protecting nature and pollution prevention.

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T

TRT INNOVATION

TRT Innovation Pilot Plant System

Page 361

TRT and NI Water have gone back to the future with an alternative waste water treatment system. They have created a self-contained wetland that naturally, safely and quietly provides ample capacity. It provides a useful and important habitat for many forms of wildlife as well as a reliable treatment system.

THOMAS McLAUGHLIN

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TURKISH AEROSPACE INDUSTRY

Zero Waste Management System & Green Flag League

Page 365

This massive company employs near 10,000 staff, and wants to be seen as a leader in environmental stewardship. A recent all-encompassing push has seen them nearly halve their CO2 output, while generating value from waste and educating their workforce to aid in further efforts both at work and home.

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V

VOLKERFITZPATRICK

Feltham Depot

Page 371

Volkerfitzpatrick used their Feltham rail depot project to showcase their ideals. They have created an innovative app for local Stakeholder engagement; reduced 88 Tonnes of CO2 compared to early design stages; reused 68% of waste produced on site; and made donations to Feltham Christmas food bank.

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W

WATER PLUS

How Water Can Help With Net Zero

Page 374

Water Plus are encouraging the efficient use of water across the private and public sectors in England and Scotland by helping to identify water waste such as leaks, raising awareness of water waste and increasing partnerships with community groups and organisations to reduce environmental impacts, along with supporting tree-planting in the UK.

KARL MANSFIELD, Water Awareness

Advocate, Water Plus

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WATES FM

Energy Management System

Page 378

This pioneering project saw Wates FM invest in an innovative Energy Management System Proof of Concept System with the objective of providing real-time energy consumption data. This data has allowed Wates FM to monitor usage and behaviours to inform energy management, reduce consumption and ultimately generate carbon reduction and cost savings.

TINA HOWE

W

WHITE ROSE CENTRE

Sustainable & Green

Page 380

White Rose's main project is to be the greenest shopping centre in the UK and to create, develop and maintain a sustainable habitat for birds, bees and wildlife. The Centre developed partnerships that could help implement the project effectively, with training documents, posters and sessions for all the retail partners so that staff can follow visual guides and monitor all waste. The beehives on the centre's roof help to pollinate local agriculture and provide honey for their charity partners.

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Y

YANNIOTIS & ASSOCIATES

Feltham Depot

Page 384

INTERRelationships_Universally Designed
Sustainable Housing Complex for Supportive &
Collective Living along with Public Usages in an
Historical Urban Context in Athens

In Greece, as much care has gone into the
buildings that provide supported living as is given
to their residents. The buildings utilise renewable
technology in all forms, as well as a suite of
creative workspaces and leisure facilities including
a swimming pool. The site boasts zero waste and
even the rent is part paid through helping on site.

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Z

ZURELI INTERNATIONAL

The Global search engine for 'Green'

Page 387

By bringing together and connecting the buyers and sellers of green products and services, Zureli have helped businesses adopt sustainable solutions. By offering a bespoke services for businesses, they greatly reduce the time and resources required to locate sustainable solutions that clients look for. They will also bring new ideas and solutions to your attention - after all, if you don't know what's available how can you find it?

TIM WORTHINGTON

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ALUMINIUM BAHRAIN(ALBA) TOWARDS ZERO WASTE ALUMINIUM SMELTING

AIM

The project aims to find a sustainable solution for the management of spent potlining material which is the most significant solid waste produced by any primary aluminium smelters in terms of environmental impact due to its relatively large footprint and its hazardous characteristics. This shall be achieved by implementing a treatment solution that is suitable to the unique requirements of the Alba smelter in the Kingdom of Bahrain to eliminate the need to landfill any generated SPL material and be able to steadily recover the legacy SPL material by insuring the following:

1. Converting the material into a useful product that is having a valuable environmental and financial benefits to the targeted industry
2. The treated material must have a consistent quality that is required by the customer
3. Sustainable customer demand for the treated material ensuring the sustainability of the whole process
4. Generated product is not environmentally hazardous and shall be safe to ship and transport to the end user
5. A process with zero waste output and no requirement for other raw material
6. A process that is capable to treat the newly generated SPL in addition to the legacy material that is temporarily stored in a controlled and engineered landfill.

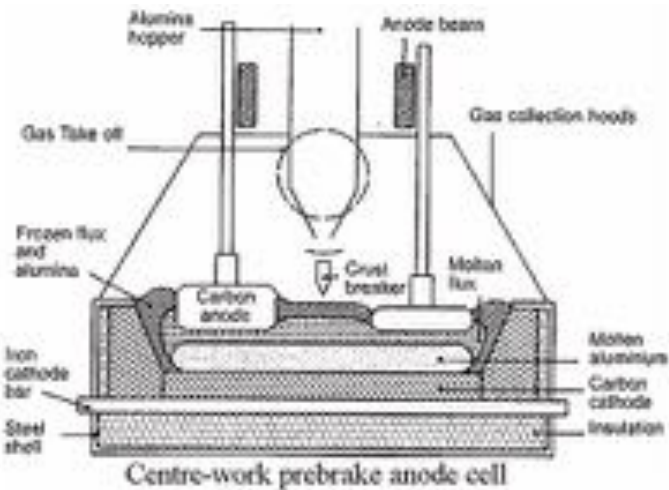


Figure 4: Cross section of an operating reduction cell using the prebake technology

IN DETAIL

Executive Summary

Aluminium Bahrain B.S.C. (Alba) consistently ranks as one of the largest and most modern aluminium smelters in the world. Known for its technological strength and innovative policies, Alba enforces strict environmental guidelines, maintains a high track record for safety, and is widely regarded as one of the top performers on a global scale.

Spent potlining material represents around 80% of a primary aluminium smelter solid waste. It is commonly characterized by environmental regulators as a hazardous solid waste due to its properties. As part of our environmental and social responsibilities, we are continuously evaluating our processes aiming to implement the most sustainable solutions.

Building and operating our dedicated SPL treatment facility which is the first of its kind in the Middle East serves our objectives of significantly reducing

our waste footprint. Additionally, the plant capacity is designed to accommodate both the newly generated SPL as well be able to steadily consume the legacy SPL from the landfill.

The chosen technology is most suitable for our unique needs and requirements. And unlike other technologies is a zero waste process with no other raw material requirement.

The added environmental benefits are not only limited to the reduced waste locally but is extended across the borders to the cement plant off taker of the material by reduced fuel and raw material consumption and reduced greenhouse gasses emissions.

INTRODUCTION

Spent pot liner (SPL) is a hazardous solid waste material and is produced in the aluminum smelting industry that uses the Hall Héroult process for the electrolysis of alumina into aluminum and oxygen. In an aluminum smelter the electrolysis undergoes in units known as electrolysis cells or reduction cells. The number of cells in a modern and sizable smelter could reach hundreds, and in Alba we have 1,808 cells distributed over 6 reduction lines.

Reduction cells are constructed of a fabricated steel shell and lined with several layers of different grade refractory material topped by large carbon blocks that function as the negative post or the cathode of the electrolytic cell, steel bus bars run through the carbon cathodes.



Figure 5: Starting the demolishing of the lining material in the de-lining shop



Figure 6: SPL material removed from the cell with sheet metal exposed

During the normal cell operation which continues for five years, some material including aluminum, fluorides and other impurities are absorbed into the lining. At the end of its useful life the reduction cell fails which can be detected by the operation crew by a glowing red spot at the outer steel shell indicating that the refractory is compromised and that molten electrolyte could penetrate the steel shell if the cell is not taken out of service for the required overhaul. During the overhaul, the cell is cleaned to the bare metal shell and all solidified material and refractories

are removed. Solidified material consists of solid bath and aluminum which is recycled in the process. The removed refractory material and cathode blocks are referred to as spent potlining (SPL).

The SPL must thus be specially treated during handling, transporting and storage in order to control and eliminate the adverse environmental impact.

DISCUSSION

Primary aluminum metal is produced by the Hall-Héroult process involving the electrolytic reduction of alumina in an electrolyte melt in cells or pots. The electrolyte is made up of molten cryolite (sodium aluminum fluoride) and other additives. High DC current is passed in the reduction cell between the positive carbon anode and negative carbon cathode with low voltage. Positively charged aluminum atoms are attracted to the cathode and settle at the bottom while oxygen atoms bubble and travel to the carbon anodes where they react to form carbon monoxide and carbon dioxide.

The pots typically have a life span of 5 years depending on the operational conditions and other factors. At the end of this period the cell will eventually fail due to failure of the refractory and liquid metal penetration reaching the steel shell. This will be manifested as a visible red hot spot on the outer steel shell which if not detected in a timely manner. Liquid melt would penetrate through the steel shell and the will flow out of the cell in what is known as a tap out. To prevent tap outs, the reduction cell is replaced with a newly refurbished cell. During refurbishment of old cells, all the old refractory and the cathode carbon blocks are removed. The steel shell is repaired where required and new refractory and carbon cathode blocks are laid. Removed refractory and carbon blocks are termed as Spent Pot Lining (SPL).

The SPL generated is listed by the United States of America Environmental Protection Agency (US EPA) as a hazardous waste due to the concentrations of

fluorides and cyanides and possibility of emitting flammable and hazardous gases when contacted with water. This material has a high leachability when it comes in contact with water, (US EPA) lists the material as hazardous waste with hazardous material designated code label (K088) under Code of Federal Regulation (CFR) 40, Part 261. Hazardous properties of SPL are:

- Presence of soluble fluoride and cyanide compounds,
- Corrosive due to presence of alkali metals,
- Produces toxic and flammable gases when exposed to moisture.

Overseas export of SPL is subject to the protocols of the “Basel Convention” on the Transboundary Movement of Hazardous Wastes and Their Disposal”.

The global primary aluminum production is around 65 million tons per annum (as per the 2020 International Aluminium Institute statistic) and is steadily growing by around 6% annually. The world’s smelters also produce more than 1.5 million tons of SPL waste every year. Historically the spent pot liner used to be disposed in landfills either onsite at the smelter or offsite, this is starting to change and new treatment processes are emerging and being used to safely treat and recycle the SPL. In applying the sustainability principles, the disposal of SPL should become a thing of a past in a few years to come.

The International Aluminum Institute (1) has defined the following “International Aluminum Institute SPL Voluntary Objective:

- The Aluminum Industry recognizes that spent pot-lining has properties that makes it a valuable material for use in other processes and will therefore strive to convert all spent pot lining into feed stocks for other industries, which include cement, steel, mineral wool and construction aggregate companies or to re-use and or process all SPL in its own facilities.

- Pending final deposition, the industry will endeavor to store all spent pot-lining in secure, waterproof, ventilated buildings/containers that will maintain the spent pot-lining in a dry state with no potential for the build-up of noxious gases.”

Moreover the Aluminium Stewardship Initiative (ASI) performance Standard requires the following:

- Store and manage SPL to prevent the release of SPL or leachate to the environment.
- Optimise processes for the recovery and recycling of carbon and refractory materials.
- Not landfill Untreated SPL where there is the potential for adverse environmental effects.
- Review at least annually alternative options to landfilling of treated SPL and/or stockpiling of SPL.
- Not discharge SPL to marine or aquatic environments.

The industry has systematically worked to minimize the amount of SPL produced, by extending the lifetime of the lining in the smelter pots. SPL has been recognised as a valuable resource for other industries, including as a feedstock in the cement, mineral wool and steel production processes. However, the main barrier to supply of SPL as a feedstock has been the ability to supply a product that is not hazardous, is of a consistent quality, and is of significant value to the off taker industry.

SPL LANDFILLING LIMITATIONS

Past practices for dealing with (SPL) worldwide include surface water or land dumping or landfilling. These methods are not environmentally acceptable because of the leachability of cyanides and fluorides through the soil to the ground water.

Such options have not been viable for Alba especially considering that the Kingdom of Bahrain is a small island country, the land area is very limited

and too valuable and there is a current tendency to develop the land for better use than landfills.

Our SPL from Alba has been stored in a secure, purpose built, and fully insulated landfill, it is placed on an impermeable base and covered with an impermeable cap. The landfill is controlled and operated by the Supreme Council for Environment which is the environmental regulator in the country. It is a fully insulated engineered landfill that has full leachate recovery and two monitoring ground water wells to monitor potential leachate penetration. The material is stored in the landfill on temporary basis, and once the treatment plant is commission, the legacy SPL at the landfill will be gradually consumed in order to facilitate the rehabilitation of the landfill.

Some smelters are storing their SPL in purposely built bunkers, which is quite expensive and requires a large footprint.

The major drawback with landfilling the SPL material in these insulated landfills is that it will need to be monitored indefinitely and the producer will be held liable for any leakage to the surrounding environment.

In certain situations some authorities are ordering smelters to addresses the removal, through excavation and offsite disposal of SPL zone material and associated contaminated soil in old aluminum smelter and landfills.

CONVERTING SPL TO A VALUABLE RAW MATERIAL

In order to come up with a solution that is sustainable, we had to make a comprehensive research for a process that will suit our needs and address our challenges. We needed a process that can be flexible to treat a variable amount of SPL from 25,000 tons up to 35,000 ton per annum. The process must be well proven and robust and need to render the material non-hazardous and would need to be a genuine zero waste project.

An internal team of experts was formed consisting of experts from different sections of the smelter such as Engineering, Environment, Process Control and Reduction Services in order to study the options and make the recommendations. It was finally concluded that the best process to suit our needs was an Australian developed technology that has been working with three Aluminium smelters in Australia for the last two decades.

Due diligence visit was made to one of the treatment plants at Tomago Aluminium Plant in New South Wales and another visit to one of the off taker cement plants in Thailand where it was seen that this project is very suitable to our specific requirements and there is a big demand by specific cement industry to this generated product. The visiting team consisted of a delegate from Alba as well as a representative from the Supreme Council for Environment (Environment Regulator).

The Regain process treats the raw SPL as received from the de-lining facility at the smelter by the following:

- Physical treatment in order to condition the material to proper sizing and segregate metal foreign objects
- Thermal treatment in order to destroy the cyanide
- Extract and reuse the explosive and flammable gasses from the SPL
- Provide a material that is safe to handle and ship
- Provide a material that has consistent quality and adds value to the end user.
- The benefits to the end user being the cement industry is the following:
- Reduced clinker temperature requirement due to the fluxing nature of the treated material, this will reduce the use of fuel and hence reduce the greenhouse gas emission of the cement plant and the cost of fuel.

- Source of required raw materials and elements for the clinker such as alumina, sodium, and fluoride.
- Further reduction in fuel cost due to the available carbon fuel within the treated material.

The targeted cement plants are those that are close to the equator with the queries being subjected to frequent washing from equilateral rain and dilution of minerals. The current global demand for the treated material is around 22 million tons. Based on the study, it has been agreed by the board of directors and supported by the Environmental Regulator to have this treatment plant in Bahrain as the first of its kind in the Middle East.

CONCLUSION

The SPL is the most significant waste produced in the aluminium smelter both in terms of its quality as being an officially recognized hazardous waste and the generated quantity which is around 20 – 30 kg per ton of aluminium produced annually. Alba through the direction of its top leaders in the board of directors and the executive management team and with the full support and backing of the national environmental regulator had the vision to implement a sustainable solution to address this aspect and have invested over 44 million USD to establish this treatment plant not only to eliminate the landfilling of around 35,000 tons of SPL annually but also to recover the legacy SPL from the landfill over the years to come.

The environmental benefits of this initiative is not limited to the significant reduction in the volume of disposed waste material, but is global as it has a positive impact on the greenhouse gas emissions of the cement plant that is a result of the reduced clinker temperature that is brought by the addition of the fluorinated product.

ASELSAN ELEKTRONİK SANAYİ VE TİCARET A.Ş. ZERO WASTE PROJECT

AIM

As an environmentally conscious and pioneering technology company, ASELSAN has put into ZERO WASTE PROJECT in order to prevent/reduce waste formation at the source in the production, R&D, consumption and service processes, to prioritize reuse, to collect the resulting wastes separately at the source and to reduce the amount of waste to be disposed of by ensuring recycling and/or recovery.

Within the scope of the project, in addition to the hazardous waste and packaging waste currently collected separately; it is aimed to separate and recycle office wastes that go directly to disposal since it has not been sorted before, and biodegradable wastes from meal preparation activities in the cafeteria are intended to be used by obtaining compost.

The scope of the project is not limited to facilities, but it is aimed to recycle waste such as batteries, waste oil, electrical and electronic equipment that personnel can bring from their homes, and to deliver unused clothes, toys and shoes to the needy and put them back into use.

The project has been also intended to be adopted by future generations and education and awareness raising activities have been carried out in this context.



ACHIEVEMENTS

1126 tons of waste emerged in the period of Zero Waste Project.

All of these wastes have been sorted and approximately 511 tons (45%) have been reassessed with recycling, composting and delivery methods to animal shelters.

Thanks to the separation of these wastes, which went directly to the garbage because they could not be sorted before the project, there has been a 45% reduction in the amount of domestic waste (garbage).

Recycling from waste brought by personnel from home are:

- Toy: 2474 pieces
- Clothes: 13849 pieces

- Vegetable waste oil: 343 litres
- Electrical and electronics items: 162 pieces
- Battery: 1134 pieces

Recyclable wastes produced within the scope of R&D, production and storage activities in the facilities have been collected separately and sent to licensed companies and reutilized.

The following recycling has been achieved.

- 2215 kg of compost has been obtained from biodegradable wastes from cafeterias and floors. The obtained composts have been distributed to the staff and used in landscaping and plant cultivation.
- A total of 291 kg of waste medicine has been sent to the disposal in a way that did not harm the environment with the application of waste medicine box.

IN DETAIL

Zero Waste Project is implemented in ASELSAN and directly affects more than 10,000 people, including subcontractors, interns and visitors, together with ASELSAN employees.

All stakeholders in the ASELSAN ecosystem, including the companies and their employees who carry and recover waste within the framework of waste recovery, more than 400 animals in terms of food residue sent to the animal shelter, and plants in our immediate surroundings in terms of compost obtained, have been positively affected by the project. Within the scope of the project, each waste generated in ASELSAN facilities is categorized as hazardous, non-hazardous, medical and packaging wastes.

The steps implemented when putting into practice the project are as follows.



1. Action Plan-Current Situation Analysis: ASELSAN Zero Waste Action Plan has been created and existing applications have been reviewed and analyzed.
 2. Project Calendar Determination: Following the determination of the works to be carried out, the project calendar has been created and acted in accordance with the calendar. Planning has been made for the gradual implementation of the application.
 3. Supply of new equipment: Equipment determined to be necessary within the scope of the project has been provided.
 - We Sort Food Waste Application: Waste sorting stations have been placed in Akyurt, Gölbaşı and Macunköy cafeterias and plastic wastes, food residue and other wastes have been started to be sorted.
 - Waste Sorting Stations Application: The use of garbage bins in work areas and offices has been put into end, and waste sorting stations (paper, plastic, glass, metal, biodegradable, battery, other waste bins) have been established in designated common areas.
 - Clothing and Toy Collection Boxes Application to parking areas: In addition to waste sorting stations in offices and workplaces; waste bins for battery waste, electronic waste, vegetable oil waste and clothing and toy collection boxes have been also placed in the entrance and parking areas of the facility.
 - Glass/Porcelain Cup Usage: In order to reduce the consumption of natural resources, the use of paper cups in the workplaces has been put into end and glass cups and porcelain cups have been given to all employees to be used in place of paper cups. Approximately 30,000 cups were distributed within the scope of the application.
 - Collection of Waste Medicines: Waste Medicine boxes have been placed in infirmaries to prevent misuse of expired, broken or impaired drugs.
 - Compost Application: A composting machine has been put into practice to obtain compost from biodegradable waste collected with Waste Sorting Stations and vegetable wastes produced during cooking.
 4. Project Launch:

“ASELSAN Zero Waste Project Launch Ceremony” was held at Macunköy facility Hacim Kamoy Integration Hall.
 5. Informing Practices: Cleaning and Cafeteria staff have been given face-to-face trainings, while staff has been informed with announcements, EYS TV videos, application guides and brochures.
- The resources used in implementing the project steps and their efficiency are as follows;
- A total of 29 waste sorting stations have been provided for the sorting of cafeteria waste.
 - Approximately 40 employees have been employed for 2 hours for 1 week to prevent disruptions at the stations in the introduction of waste sorting in the cafeteria.
 - A total of 1,233 waste sorting boxes have been supplied to the floors. Income has been generated from paper, plastic and metal waste collected by sorting from the beginning of the project.
 - A total of 4 Toys and 4 Clothing collection boxes have been placed in the parking areas.
 - Approximately 1,233 waste sorting bins have been checked instead of checking approximately 7,500 garbage cans daily and taking the garbage by the employees in the

garbage collection task on the floors, and workforce has been reduced. This workforce is used in the workforce required for daily weighing of waste.

- 30,000 porcelain cups and glass cups have been distributed to employees, subcontractors and interns, ending the consumption of 1,350,000 paper cups per month.
- Composting machine has been provided for composting of biodegradable waste collected from floors and cafeteria. Environmental risks at ASELSAN are defined within the scope of ISO 14001:2015 Environmental Management System standard.

Environmental risks arising from waste management, which is one of the most important of these risks, have been minimized within the scope of the project implemented. The degree of impact of environmental damage due to waste formation and natural resource use has been significantly reduced.

The transfer of waste directly to regular storage areas (garbage) can cause soil, water and air pollution. Within the scope of the zero waste project, the amount of waste going to waste has been reduced by 45.31 % and environmental risks have been minimized.

In addition, by being a leading organization in the defense industry, the risk is reduced in order to comply with legal requirements and to ensure the needs and expectations of stakeholders. Within the scope of the project, waste management practices carried out in ASELSAN up to today have been expanded and cafeteria waste and office waste from floors have been included in the process.

In order to prevent waste, toys and clothes that the staff would like to bring from their homes have been delivered to non-governmental organizations to be delivered to the needy. It is aimed to protect nature and contribute to the country's economy by

including batteries, electrical, electronic equipment and waste oils that not only come out of ASELSAN facilities but also that personnel can bring from their homes.

In order to be a pioneer as an environmentally conscious technology company, awareness raising efforts are not limited to ASELSAN employees, and also nursery, kindergarten students and subcontractor staff are included.

Zero Waste information training has been given to subcontractors through Gücümüz Bir (Our Combined Strength) platform.

Employee awareness is constantly increased through activities such as Waste Sorting Station competition, information notes, etc. ASELSAN aims to expand the impact area of the project and to increase environmental contribution and to be pioneer and leader in the sector.

ASEZ KOREA GREENSHIP NETWORK

AIM

Greenship Project to Improve Environmental Awareness

“Greenship” is a compound word of green and citizenship, which puts an emphasis on the environmental duty as well as the environmental rights as global citizens. ASEZ is sharing the seriousness of environmental problems and also citizens’ duties and responsibility for it with teenagers, college students, and local governments of each country.

In order to cope with natural disasters and climate change that infringe major human rights, ASEZ is running the Greenship Project by holding environmental seminars, forums, and campaigns and by gathering signatures that support its activities. Ultimately, ASEZ aims to raise the environmental awareness of teenagers, college students, and local governments of each country, and build the worldwide environmental network between generations, regions, and social classes for their active participation in environmental issues, so that the global base can be formed to cope with climate change.

ACHIEVEMENTS

Raising Environmental Awareness of Teenagers, College Students, and Local Governments around the World

- 1) Environment Forums & Seminars:
26 times, 476 teenagers, and 625 college students participated (Since 2015)
- 2) UN SDGs Implement Project

to Combat Climate Change (Dec. 2017–Jan. 2018)

Paying attention to details of Goal 13, “Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities,” ASEZ carries out forums for SDGs implementation and the signing campaign so that no one will be left out from solving the climate change and environmental issues.

- ASEZ Forums to Implement the UN SDGs (Dec. 2017–Jan. 2018):
4,000 participants from 10 countries
- Signature Campaign to Support ASEZ Proposal for the Implementation of UN SDGs:
37,973 participants online and offline (Dec. 2017–Jan. 2018)

2. Improving Community Environment

- 1) Environment Cleanups (Since 2015): 386 times, 11,482 participants in 174 colleges
- 2) Worldwide Green Campus Cleanups: 6,000 participants in 81 colleges (Jan. 15, 2017)



3. Building Worldwide Network to Combat Climate Change
 - 1) Signing an MOU with Local Governments: 31 MOUs
 - 2) Meetings with Local Governments: 75 times



Through these activities, ASEZ informs people of serious environmental problems and shares environmental responsibilities with citizens.

From 2015 to present, a total of 386 environmental awareness-raising campaigns have been conducted with 11,482 college students, and inspired environmental awareness in college students and local communities, and through environmental forums and seminars 476 teenagers and 625 college students have shared the concept of the Greenship Project.

In particular, the teenagers who were educated about the importance of environment through seminars cleaned up 1 km around their schools and

learned the importance of small actions.

IN DETAIL

People's rights to life, including the entire sectors of life (food, water, health, education, etc.), are being threatened due to environmental problems such as natural disasters and climate change. Environmental rights are important and inseparable from human lives and rights. So, ASEZ is planning to build a global environmental network among generations, regions, and social classes, as a way to raise environmental awareness among teenagers, young adults, and local governments in each country and to promote their substantial participation through the Greenship Project.

Greenship is a combination of green and citizenship, which contains the concept of our environmental rights and responsibilities as global citizens.

ASEZ believes that environmental rights, which nature provides to humans, can be ensured through our observance of environmental responsibilities, and carries out diverse activities all over the world to raise environmental awareness, such as seminars, forums, campaigns, and signature collecting.

In January 15, 2018, the Green Campus Cleanup was held at 81 campuses all around the world, which attracted 6,000 participants and inspired environmental awareness in college students.

Moreover, ASEZ conducted forums for the implementation of UN SDGs as well as signature-collecting campaigns to share environmental knowledge and skills so that everyone, without exception, would work on solutions to climate change and other environmental problems, based on the ideas of helping women, teenagers, regions, underprivileged communities, developed countries, and developing countries improve their skills for effective climate change solutions—the specific targets of Goal 13.

For three months from December, 2017 to January, 2018, forums to share the knowledge of the SDGs were held in 10 countries around the world (4,000 participants), and 37,973 people participated in the signature collecting campaign to implement the sustainable Greenship.

This campaign was also attended by many political and educational officers, including Mr. Ban Ki-moon, 8th Secretary-General of the United Nations, five African ambassadors to the United States, mayors, and professors. Furthermore, ASEZ signed MOUs with over 31 institutions all around the world.

These activities of ASEZ have received a favorable evaluation for inspiring environmental awareness in people from all walks of life, including teenagers and college students, and improving executive ability to implement Greenship at regional level.

The activities of ASEZ are based on communication just as Robert Hoover, Nobel laureate in chemistry 1988, said. The greatest achievement of ASEZ is inter-generational, inter-regional, and inter-social class communication. ASEZ has formed a network linking the youth and college students, who are our future generation, and communities that are the executing bodies, through which it has actively raised their environmental awareness; particularly, the awareness-raising has been centered on the developing countries that need substantial help and change.

In fact, ASEZ constantly held environmental forums for college students in Nepal and signed MOUs with Kathmandu City Hall and TU University to raise

their awareness. Also, a total of 19 youth awareness training sessions have been held in Nepal from 2015 to the present day, and this helped college students become educators and leaders in environment. Furthermore, the elementary and junior high school students, who participated in cleanups with college students to purify 1 km around their schools, not only learned knowledge but also put into practice their will into solving environmental problems.

“In the course of history, there comes a time when humanity is called upon to shift to a new level of consciousness, to reach a higher moral ground.”
(Wangari Maathai, Nobel Peace Prize Winner)

In a short time, ASEZ has experienced through the Greenship Project how simple small efforts change human awareness, improve communities, and increase human worth. Also, it has keenly realized the role of college students who are taking the initiative in this.

As Wangari Maathai says, if it is needed to shift to a new level of consciousness to reach a higher moral ground, now is the time. At the time of new crisis or opportunity that college students face as the future generation, ASEZ will eventually make a difference through small practices in its campuses and communities.



ASEZ WAO GREEN WORKPLACE

AIM

ASEZ WAO actively takes action to reduce greenhouse gases and combat climate change around the world through Green Workplace Project. The Goal of Green Workplace project is to carry out 12 practices (Turn off the monitor, Switch off the power strip, Use stairs, Use a Cup, Turn off the faucet, Use a washing-up bowl, Use public transportation, Ride a bicycle, Use reusable paper, Use your personal cup, Use a handkerchief, Clean Mailbox) for one year and reduce a total of 589kg of CO₂, which is about 0.5 tonne of CO₂. And that is equivalent to planting 93 trees per person.

Green Workplace Project

| Category | Classification | CO ₂ Reduction | Effect of Planting Trees |
|------------------------|-------------------------------|---------------------------------|--------------------------|
| Saving Power | Turn off the monitor | 17.7 kg of CO ₂ | 3 trees |
| | Switch off the power strip | 12.6 kg of CO ₂ | 2 trees |
| | Use the stairs | 4.7 kg of CO ₂ | 1 tree |
| Saving Water | Use a cup when brushing teeth | 6.9 kg of CO ₂ | 2 trees |
| | Turn off the faucet | 18.9 kg of CO ₂ | 3 trees |
| | Use a washing bowl | 4.8 kg of CO ₂ | 1 tree |
| Minimalistic Lifestyle | Use public transportation | 469.4 kg of CO ₂ | 71 trees |
| | Ride a bicycle | 25.1 kg of CO ₂ | 4 trees |
| | Use reusable paper | 10.9 kg of CO ₂ | 2 trees |
| | Use a personal cup | 3.5 kg of CO ₂ | 1 tree |
| | Use a handkerchief | 10.5 kg of CO ₂ | 2 trees |
| | Clean mailboxes | 4 kg of CO ₂ | 1 tree |
| Total | | 589 kg of CO₂ | 93 trees |



Also ASEZ WAO carries out Green Workplace activities which are in line with SDGs No. 7 Affordable and Clean Energy, No. 11 Sustainable Cities and Communities, and No. 13 Climate Action.

IN DETAIL

- Period: Jan.1.2020~April.30.2021
- Place: 64 countries (USA, Peru, Malaysia, South Africa, Germany etc.)

- Result: 21,365 participants, reduced total of 747,238.568 kgCO₂ equivalent to planting 184,251 trees
 - Turn off the monitor: 42 participants, reduced total of 743.4kgCO₂ equivalent to planting 126 trees
 - Switch off the power strip: 59 participants, reduced total of 738.4kgCO₂ equivalent to planting 118 trees
 - Use stairs: 107 participants, reduced total of 502.9kgCO₂ equivalent to planting 107 trees
 - Use a Cup: 87 participants, reduced total of 685.8kgCO₂ equivalent to planting 174 trees
 - Turn off the faucet: 40 participants, reduced total of 756kgCO₂ equivalent to planting 120 trees
 - Use a washing-up bowl: 13 participants, reduced total of 62.4kgCO₂ equivalent to planting 13 trees
 - Use public transportation: 48 participants, reduced total of 22,531.2kgCO₂ equivalent to planting 3,408 trees

ASEZ WAO Green Workplace Project Result

| Category | Classification | No. of Participants | CO ₂ Reduction | Effect of Planting Trees |
|------------------------|-------------------------------|---------------------|---------------------------|--------------------------|
| Total | | 21,365 | 747,238.568 | 184,251.167 |
| Saving Power | Turn off the monitor | 42 | 743.4 | 126 |
| | Switch off the power strip | 59 | 738.3 | 118 |
| | Use the stairs | 107 | 502.9 | 107 |
| Saving Water | Use a cup when brushing teeth | 87 | 685.8 | 174 |
| | Turn off the faucet | 40 | 756 | 120 |
| | Use a washing bowl | 13 | 62.4 | 13 |
| Minimalistic Lifestyle | Use public transportation | 48 | 22,531.2 | 3,408 |
| | Ride a bicycle | 37 | 928.7 | 148 |
| | Use reusable paper | 27 | 296 | 54 |
| | Use a personal cup | 180 | 739.2 | 192 |
| | Use a handkerchief | 36 | 378 | 72 |
| | Clean mailboxes | 20,689 | 718,876.668 | 179,719.167 |

- Ride a bicycle: 37 participants, reduced total of 928.7kgCO₂ equivalent to planting 148 trees
- Use reusable paper: 27 participants, reduced total of 296kgCO₂ equivalent to planting 54 trees
- Use your personal cup: 180 participants, reduced total of 739.2kgCO₂ equivalent to planting 192 trees
- Use a handkerchief: 36 participants, reduced total of 378kgCO₂ equivalent to planting 72 trees
- Clean Mailbox: 20,689 participants, reduced total of 718,876.7kgCO₂ equivalent to planting 179,719 trees



Young Adults Open the Way of Hope



All people living on the earth together is like one family.
ASEZ WAO, the World Mission Society Church of God
Young Adult Worker Volunteer Group,
communicates with the world
and works in harmony to make a hopeful future.
Beyond language and culture,
they share the warmth of Mother's love.



ASHDOWN PHILLIPS & PARTNERS

THE TANGIBLE, MEASURED AND AUDITED REDUCTION OF PLASTIC & CO2E

AIM

Ashdown Phillips & Partners are a highly sustainable and innovative Property Management Company with a legacy of reducing carbon emissions.

We focus on providing a truly socially, environmentally and economically sustainable property management service. We believe that, as part of this service, we have a responsibility to have a positive impact.

Whether that is by improving the environmental impact of each property on behalf of our clients; charitable work serving the communities we work in; or the wellbeing of our team and occupiers.

We do all this whilst providing the best property management service for our occupiers and clients. Established in 2004, Ashdown Phillips & Partners believed there was a better and more sustainable way to manage property and set out to become the closest thing to an in-house service a client could find.

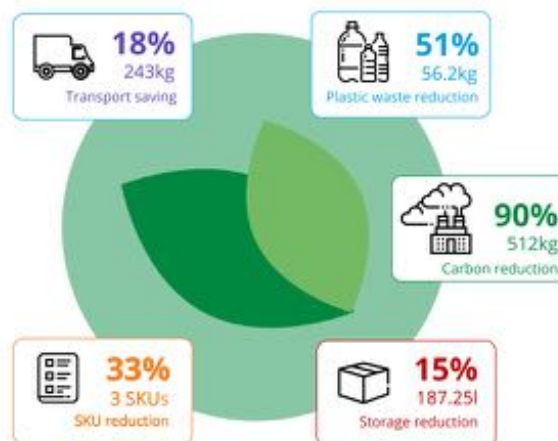
Our objective is to demonstrate continuous improvement in sustainability and social value to the property management sector and wider business community. We are committed to not only minimising the use of the planet's resources, but to ensure that in every business activity and client based operation, we leave a positive and beneficial legacy.

ACHIEVEMENTS

Specifically related to our work at our flagship site, The Bower, with the introduction of a new and forward-thinking management team our aim was to



| | INCUMBENT | BH | | SAVING |
|-------------------|-----------|---------|-----|---------|
| Plastic | 109kg | 52.5kg | 51% | 56.2kg |
| Transport | 1343kg | 1100kg | 18% | 243kg |
| CO ₂ e | 567kg | 54.9kg | 90% | 512kg |
| Codes | 9 | 6 | 33% | 3 SKUs |
| Storage Volume | 1234.75l | 1047.5l | 15% | 187.25l |



achieve new benchmarks in sustainability, inspire behavioural change and minimise the environmental impact of our operations within The Bower.

Specifically this entry relates to our on-site cleaning services delivery, with our partner of choice GreenZone Cleaning and Support Services Ltd, a previous Green Apple winner and Green Apple Ambassador.

This entry demonstrates a measured, audited and tangible reduction of Plastic & CO₂e whilst also removing hazardous substances and toxicity for the users and delivering the fastest biodegradability.

Through a new revolutionary approach and methodology we have been able to dramatically demonstrate significant sustainability benefits vs “traditional” cleaning practices.

IN DETAIL

Ashdown Phillips & Partners has successfully managed The Bower since 2013.

The Bower is a landmark quarter for Old Street, featuring 320,000 sq ft of beautifully designed, modern space and a vibrant restaurant and retail destination. Our aim was to achieve new benchmarks in sustainability, inspire behavioural change and minimise the environmental impact of our operations within The Bower.

Ashdown Phillips & Partners ensure the availability of resources essential to establish, implement, maintain and improve the company’s sustainable and social value management systems. As well as our practical skills, we are also finding good use for our relationship skills too.

We see importance in being connected, not only to our clients and occupiers, but to others too. We have developed an excellent relationship with local resident committees, charities, the local council and local security community. Because we have been involved in the scheme from purchase; we find everyone on site comes to us.

Through an innovative, diligent and robust tender Ashdown Phillips & Partners were able to re-appointed, GreenZone as our cleaning company at the Bower in 2020, as a result of their commitment to sustainability and social value. Since their re-award and re-implementation, GreenZone has enabled us to reduce our impact on the environment with their effective Biological and Ecological Cleaning Solutions which are devised to meet the rising demand for cleaning services that respond to the ‘environmental conscience’ of today’s ethically minded business owners.

This has become evident with the implementation of BioHygiene cleaning, an innovative alternative to raw materials that are known to be harmful to human health or damaging to the environment while ensuring the resulting products are highly effective. We aim to replace undesirable raw materials with a combination of biology, plant extracts, natural thickeners and naturally derived sustainable surfactants.

We want our cleaning processes to be safer for the environment and the person using them. With careful selection this has allowed us to satisfy all of our goals relating to product performance, value for money, better health and safety profiles with a lower environmental footprint.

BioHygiene cleaning is used successfully at The Bower and provides the following key environmental advantages:

- Naturally Sourced Technology; Raw materials come from renewable and sustainable sources, Microbes, Enzymes and Plant Extracts Cleaning products are formulated for the lowest possible toxicity and the fastest biodegradability
- Reduces impact on aquatic life
- Reduces use of hazardous substances
- Nothing harmful is left behind

WASTE AND ENERGY MANAGEMENT

All cardboard and plastic waste is recycled and as biodegradable as possible with all raw materials being entirely biodegradable. Cold blending processes are used during production to reduce energy consumption as much as possible.

Priority for supply of raw materials, packaging and services is given to local companies. Formulated effective product concentrates to reduce carbon footprint, shipping costs, waste emissions and fully optimise our shipping volume to packaging weight ratio.

Outperforming Tradition Excellent results on porous surfaces Continuous cleaning action
Removing odours at their source
Plastic & CO2e Reduction
Post-Consumer Resin Closed Loop, reduces physical plastic pollution
Reduce CO2e by up to 85%
Stops single use plastic
Improved Cleaning Efficacy
Reduces hazardous material
Rationalise range
Reduces product spend
Reduces storage requirements
Reduces storage requirements
An Environmental Solution
Reduces transportation weight
Reduce delivery frequency
100% biodegradable (90% within 28 Days)
Reduces plastic waste (PCR and super concentrate)
Reduces deliveries
Reduces overall CO2e

RESULTS

Measured and audited results of implementing BioHygiene cleaning were significant. Of note there was in excess of a 50% reduction in plastic packaging and a 90% reduction in carbon!

LEARNINGS & FUTURE DEVELOPMENT

Ashdown Phillips also provide support and work alongside our clients, building users and employees to help them achieve targets for sustainability and environmental best practice.

We find that education and awareness is intrinsically linked to the success of all green initiatives and can work to ensure this message is conveyed to building users through:

Holding live training road show events and/or presentations to client's, building users and employees to highlight the impact of recycling and waste minimisation.

Suction cleaners designed to retain micro-particles and allergens

Optimised work patterns to reduce total labour and travel

Living Wage Service Provider (all on-site contract staff (in London) must be paid at least the London Living Wage.

Daytime cleaning is one of the best methods of reducing energy consumption within office environments.

Fair Trade Uniforms as one of the most important criteria addressed in conjunction with our suppliers, is that of workers' rights and conditions of employment, both in a direct and subcontract manufacturing situation.

Where feasible we look to restrict the use of bin liners in bins preferring more regular washing of the bins as opposed to the throw away mentality. The refuse sacks that we use are 97% recycled polythene which is all UK derived with 30% of this being post-consumer recycled product.

DMR (Dry Mixed Recycling) - available to all of our clients and building users through our waste/recycling partners. We can offer fully integrated solutions to clients removing general waste bins from desk locations and replacing with centralised bulk bins

Lights-off Working Practice - As part of our on-going commitment to reducing our carbon footprint, we like to propose a 'Lights Off' strategy within our customers building. This will entail an efficient workflow of cleaning around the buildings zone-by-zone, meaning that lights are turned off after the operatives(s) have completed the required tasks.

Offering client custom designed awareness posters that can be used in common areas, lifts, lobbies and breakout areas. Liaising with our Marketing Department to discuss informative 'ecomails' and 'green' advertising on social media.

ASHGHAL

QATAR'S PUBLIC WORKS AUTHORITY "ASHGHAL", ROADS PROJECTS DEPARTMENT (RPD)

AIM

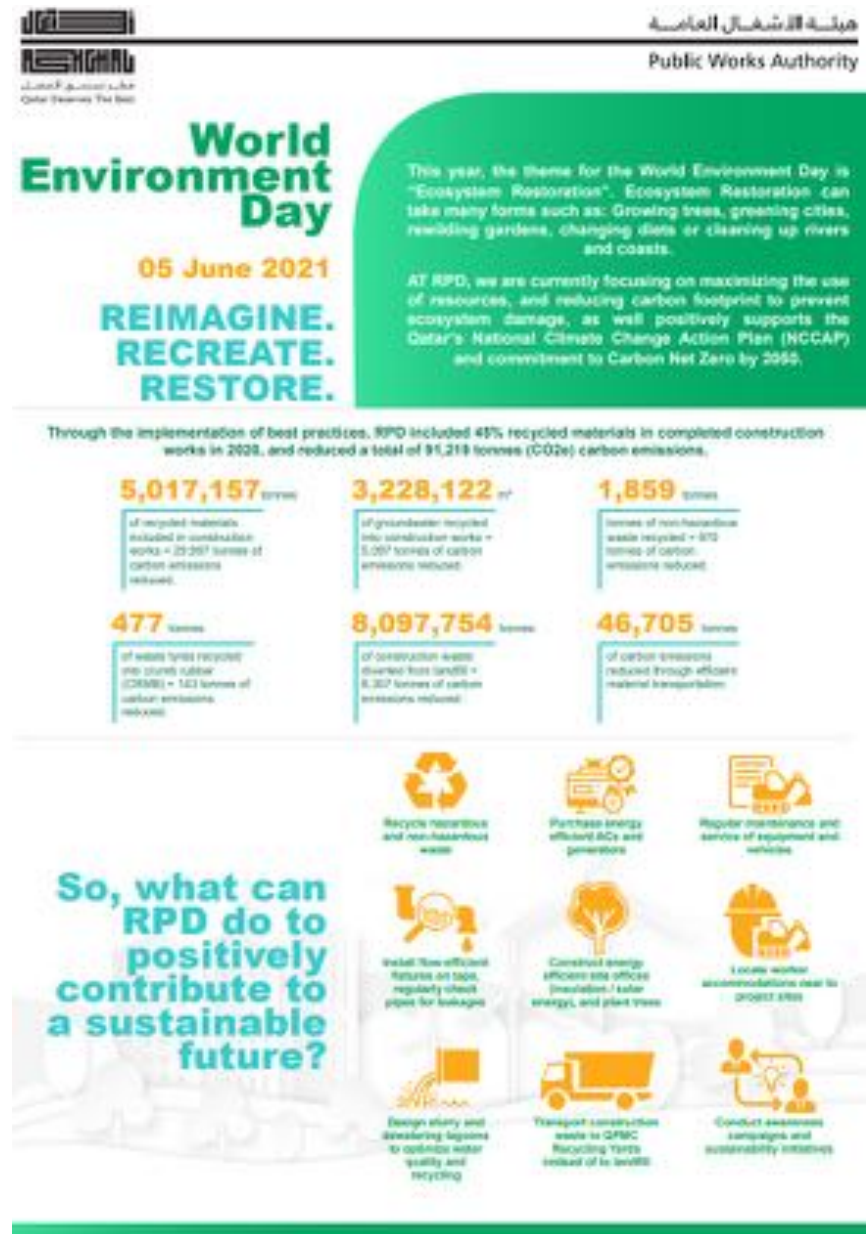
As part of Qatar's Public Works Authority "Ashghal", Roads Projects Department (RPD) is the infrastructure delivery arm of the country. In 2011, RPD commenced a portfolio of projects that currently include more than 250 projects in different design and construction stages.

The scope of works includes roads, sewage, surface and groundwater networks. It also includes TSE networks and softscape works in addition to cycle and pedestrian paths to better the quality of life in residential areas.

Considering the magnitude of works, RPD relies on 10 international design and supervision consultants and around 40 contracting companies.

This supply chain is brought to harmony through a team of around 300 professionals who train, manage and direct the project teams to achieve the desired targets. RPD aims to set the example locally, and regionally by delivering this mega infrastructure programme in the most socially, economically and environmentally sustainable manner.

RPD is proactive in its implementation of innovations and best practices accelerating the achievement of



Qatar's strategic objectives and commitments.

Qatar's sustainable development strategies are detailed in its National Development Strategy 2018-2022 and National Vision 2030 (QNV 2030) with climate change commitments including ratification

of 2015 Paris Agreement and becoming Net Zero by 2050.

ACHIEVEMENTS

Since inception of RPD's full infrastructure development programme in 2011 a total budget of GBP 33.5 billion has been committed by the State of Qatar, and achieved delivery of the following infrastructure:

- Road Lane Length (1,888 km),
- Pedestrian Paths (685 km),
- Foul Sewer Networks (601 km),
- Surface and Ground Water Networks (1,021 km),
- Treated Sewage Effluent (TSE) Networks (425 km),
- Subdivision Plots Served with Utilities (42,586),
- Area of Soft Landscaping Established (192,727 m²).

Since 2019, RPD has had many notable environmental management and sustainability achievements that has led to a proliferation of best practices, independent sustainability initiatives and raising of sustainability awareness across Qatar.

RPD has implemented an innovative tool to accurately record and monitor its total (including Scope 3) carbon impacts and reductions, initiated the establishment of key construction material recycling yards that significantly increase resource efficiency, and reduce required transportation distances.

Implementation of CEEQUAL V 6 has also been included as a contractual requirement for all newly awarded projects. RPD's recycling innovations and successful initiatives promoted continual improvement that resulted in Ashghal's RPD winning of local and international awards.

IN DETAIL

Ashghal's Roads Projects Department (RPD) "lives" by the aims of the Green Apple Awards, through its outstanding innovations and sustainability achievements. Resource efficiency, sustainability reporting and enhancing competitiveness of organisations, drive RPD's continual improvement.

RPD raise awareness, increase adoption of its best practices and support Qatar's commitment to Net

Carbon Reductions

Carbon Reductions for Completed Permanent Works in 2020



| Material / Item | Recycled Material (tonnes) | Conventional Approach (tCO2e) | Innovative Approach (tCO2e) | Reduction (tCO2e) |
|--|----------------------------|-------------------------------|-----------------------------|-------------------|
| CRMB Asphalt | 58,875 | 2,314 | 1,964 | 350 |
| RAP Asphalt | 102,767 | 4,038 | 174 | 3,864 |
| Backfill / Subgrade | 4,147,667 | 32,193 | 10,369 | 22,024 |
| Subbase / Road Base | 436,704 | 3,411 | 1,092 | 2,319 |
| Pipe & Cable Bedding | 271,144 | 2,118 | 678 | 1,440 |
| Recycled Groundwater (m ³) | 3,228,122* | 10,851 | 5,754 | 5,097 |
| Materials Transportation | 8,245,279 | 40,355 | 12,491 | 27,864 |
| TOTAL | 8,245,279 | 95,380 | 32,522 | 62,858 |

* Represents quantity in m³ recycled into completed permanent works. Due to high groundwater table in Qatar (3m – 15m below grade), surplus groundwater not recycled into construction works is treated to meet quality requirements and discharged to sea or to the deep Aruma Aquifer (400 m below grade) via deep injection wells. In 2020, the Aruma Aquifer was charged with a total of **31,450,000 m³** for future use.

Zero by 2050. RPD is responsible for the design, construction and delivery of critical infrastructure for the citizens and residents of Qatar.

Projects vary in size and complexity (local roads, drainage, utilities and complete subdivision developments). Currently, there are 80 Projects under construction with a combined contract value of GBP 7.2 billion. To improve environmental performance, RPD developed and implemented its Environment and Sustainability Monthly Report (ESMR) in 2019. The ESMR is an innovative tool for accurately monitoring and reporting all construction materials as well carbon impacts and reductions.

For the ESMR data outputs to be accurate and specific to Qatar's unique construction environment, research and computation of three broad components were required. Firstly, density conversion factors were applied to all construction materials whether raw (excavated limestone), waste (food, used oil), reclaimed (asphalt pavement) or finished (pre-cast concrete manholes).

This was required because not all projects physically weigh materials when transporting. Secondly, each material was applied with an embodied carbon factor. For this, research papers and resources were referenced (e.g. ICE databases, UK Guidelines).

A number of the embodied carbon factors required adjustment to be relevant and specific to Qatar, e.g. gabbro (sourced from Oman and transported by ship due to blockade), and potable water (sourced only from the desalination process). Thirdly, transportation carbon factors were applied for the specific materials and vehicle types, adjustments were required due to the number of aged vehicles, prevalence of idling and use of air conditioning for ten months of the year.

Transportation distances and exact number of loads are recorded in the ESMR. Accuracy of data compiled by the Contractors is first reviewed by the Supervision Consultants before final review

and verification by RPD. The ESMR allows RPD to measure its carbon footprint against the conventional approach and is happy to report a total carbon emissions reduction of 91,219 tonnes (tCO₂e) for 2020, which positively supports Qatar's National Climate Change Action Plan (NCCAP).

RPD has learnt that it must keep updated with global trends, research and emissions related data, and will invest in verified carbon credits in order to achieve emission reduction targets. To optimise resource efficiency, Ashghal established three strategically located construction material Recycling Yards to the north, west and south of the capital city Doha.

These facilities became operational in 2020 for processing and recycling construction waste materials (excavated material, reclaimed asphalt, concrete, and demolition waste) instead of disposing to landfill. Ashghal's Recycling Yards reduce the one-way distance for disposal to landfill by 60 km on average, and also the demand for imported construction materials and related embodied carbon footprint.

In addition, Ashghal implemented a Recycling and Sustainability KPI across all its projects mandating that completed construction works must include at least 20% recycled material. RPD overachieved this KPI with 45% and 8,245,279 tonnes of recycled material in 2020.

To maximise the use of recycled material in final infrastructure works without compromising the quality of assets, research and testing was required. Excavated material is processed and treated to meet the quality requirements for use in backfill, subbase, road base and pipe bedding.

Demolition and concrete waste is processed to separate its components, steel waste is further recycled and reclaimed gabbro from concrete is used to treat and improve the quality of processed excavated material. Reclaimed asphalt from road upgrades is like "Qatar's topsoil", it has high

recycling value for processing into asphalt mixes for new roads, similar to how traditional topsoil is preserved for rehabilitation.

Approved Reclaimed Asphalt Pavement (RAP) mixes are implemented in Base Courses, but not permitted in the Wearing Course (WC) layer due to the altered flak properties of reclaimed aggregates. Crumb Rubber Modified Binder (CRMB) asphalt mixes are implemented in the WC layer.

Extensive research, testing was done to determine the viability of implementing CRMB asphalt mixes in Qatar's harsh environment, which yielded an international award winning scientific paper on the subject at CIC 2020. CRMB asphalt mixes result in large waste tyre stockpiles being diverted from landfill to tyre recycling facilities for CRMB production. Ashghal has enhanced the competitiveness of organisations through staff involvement (Direct staff, Contractors and Supervision Consultants) and its successful Green Award initiative.

Ashghal's Green Award was implemented as a pilot by RPD within its own projects 2018, developed and improved in 2019, and implement across all Ashghal Departments in 2020 with 38 projects submitting high-quality applications. Ashghal's Green Award promotes a culture of sustainability and environmental best practice among its staff and the private sector within a competitive framework.

Projects are motivated to raise sustainability standards through recognition and reward by Ashghal at a formal awards ceremony. Sharing the documented lessons learnt and successful innovations has led to a proliferation of best practices beyond Ashghal's direct sphere of influence, and raising of sustainability awareness throughout Qatar.

This successful initiative resulted in Ashghal and RPD being recognised in 2020 by winning the "Best Government Initiative" Award at QGBC's (Qatar Green Building Council) annual Sustainability

Awards, and being shortlisted in the "Best Campaign in the Government Sector" category at IEMA's Sustainability Impact Awards.

The model example of sustainability management set by RPD in 2020 is replicable both in the Middle East and globally, and broader adoption by others beyond Qatar's border will greatly increase the chances of the World achieving Carbon Net Zero by 2050.

BALFOUR BEATTY

INVERARAY TO CROSSAIG 275KV OVERHEAD TRANSMISSION LINE REINFORCEMENT PROJECT

AIM

The overhead transmission line reinforcement project is to replace an existing 132kV Overhead Power Line with a new 275kV OHL from Inveraray to Crossaig.

The existing 132kV twin circuit steel lattice overhead line forms an important part of the Scottish & Southern Energy Networks (SSEN) SHE Transmission system between Inveraray 132kV

Switching Station to Port Ann 132kV Substation to Crossaig 132kV Substation. This route is to be replaced with a 275kV double circuit steel lattice tower line. The Scope of Work to construct this new 275kV line is required to increase the capacity of the transmission system in Argyll to improve the security of supply and future generation connection.

To allow construction of the new line there will be a need to upgrade existing access tracks, construct new access tracks (both temporary and permanent)



with passing places, form water crossings, form access spurs and prepare tower compound sites for construction. Install overhead line winching positions for overhead line wiring and construct turning areas along tracks. Project satellite yards will be formed, borrow pits opened up, both of which will require land take and good environmental management i.e. site drainage, pollution prevention plans to protect the water environment and recycling waste management.

ACHIEVEMENTS

The coir-matting mitigated potential soil erosion from exposed excavations, subsequently decreasing potential source water contamination risks and localised landslips. The coir-matting also promoted revegetation, which in time will add to the strength and stability of the exposed soils.

- Best practice bioengineering technique
- Cost effective solution to mitigate erosion and prevent pollution incidents
- biodegradable solution allowing regrowth of exposed banks
- Protection of Scottish Water drinking water assets.

IN DETAIL

The new overhead line operational activities and access track construction build was undertaken within or in close proximity to Scottish Water reservoir Stelldre Ban Loch. The access track was approximately 2km in length and traversed across steep exposed terrain, and approximately 150m upstream of the loch reservoir. Numerous watercourses flowed off the hillside, down through our construction activities in to the loch reservoir below.

So, it was imperative that our mitigation measures reduced the likelihood of silt runoff polluting the water treatment works. Targeted pollution prevention plans, alongside onsite support ensured our activities did not affect the water quality during the construction of the new road access tracks and tower site compounds.

Inveraray Water Treatment Works (WTW) and Catchments include:

- Inveraray Water Treatment Works (WTW) – supplies water to approximately 850 customers in Inveraray and the surrounding areas. Inveraray town is popular with tourists, and during the holiday season the number of users could double, therefore, it was imperative our construction activities did not impact on the water quality within the catchment.



Where:

SSEN Inveraray-Crossaig 275kV OHL project (Towers IC22 to IC26 - Scottish Water Drinking Water Catchment Area)

When:

Spring/Summer 2020

Who:

Power Transmission & Distribution

Quote:

"This section of the project not only demonstrated best practice but highlighted the benefits of collaborative working between the various stakeholders to achieve individual organisational objectives."

Malcolm Walker, Scottish Water Catchment Liaison Officer

- Stallaire Ban Loch is the primary source for Inveraray WTW.

Water from burns and watercourses that flow under our constructed access tracks augments Stallaire Ban Loch levels

3. The Measures

The project environmental team proposed a bank reinforcement solution to alleviate potential erosion and subsequent pollution. A bioengineering solution was agreed with, Scottish Water and Scottish Environmental Protection Agency (SEPA).

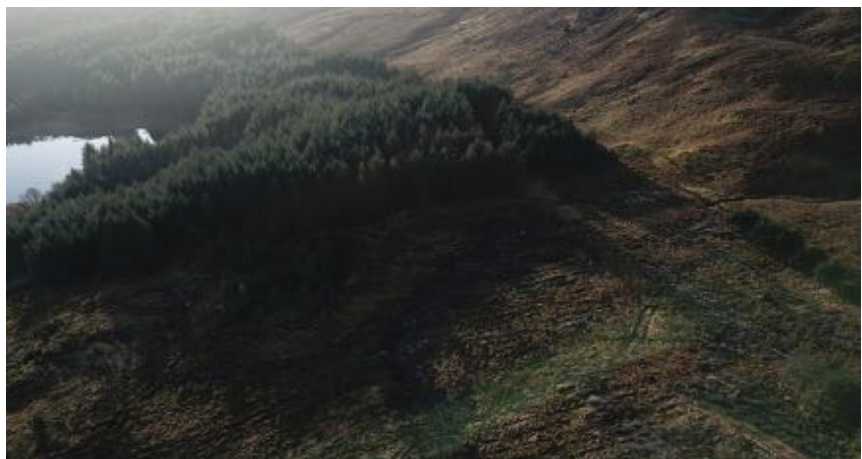
Exposed banks were lined with 100% biodegradable coir-matting, held in place with wooden stakes to ensure stability. This type of organic matting is suitable for surface stabilisation, consequently lessening the risk of exposed soil erosion, and reducing the likelihood of silt laden water runoff entering the Stallaire Ban Loch (the primary Inveraray WTW source).

SUMMARY NOTES

- The new overhead powerline construction activities was undertaken in a Scottish Water (SW) catchment, and within close proximity to the water treatment works and loch reservoir. The SW asset is the primary source of water for the historic town of Inveraray and surrounding areas
- In the event of an incident, remediation costs could not only be expensive, but there could also be irreversible reputational damage to the company. For example; if the water treatment works was impacted and had to shut down due a pollution event, fresh tanked or bottle water would need to

be transported from afar at significant cost to Balfour Beatty

- Balfour Beatty planned and installed mitigation measures to protect the local public water supply
- Environmental mitigation costs formed part of the tender process, therefore, all mitigation costs formed an integral part of project construction budget
- Coir matting is an effective low-cost biodegradable solution to mitigate erosion and prevent pollution and impacts to the local environment
- Coir-matting promotes revegetation, which in time will add to the strength and stability of the exposed soils. It is a biodegradable product to physically reduce impacts on the local ecology and water environment
- All of the lessons learned from the mitigation measures will be implemented throughout the project and rolled out within Balfour Beatty. The methods and strategies implemented would in doubt benefit other organisations faced with the same engineering obstacles
- Working closely with Scottish Water, Stakeholders and interested parties ensured we did not contravene our Construction Site Licence (CSL) conditions or pollute Scottish Water drinking water asset during our construction activities.



BALFOUR BEATTY ISLINGTON PUMPING STATION

AIM

The Islington Pumping Station Project, valued at £23m and procured on the Scape 2 National Engineering Framework, is funded by King's Lynn Internal Drainage Board.

Changing climate and age have necessitated replacing the existing pumping station and associated outfall pipe, minimising future flooding risk to the Islington and Green Bank catchments (1500 residents, 500 businesses and 9,700 hectares) and providing outfall capacity under high tide conditions to the River Great Ouse.

Works also involve desilting and reprofiling of the western end of Smeeth Lode Drain; a new compound area; security fencing; eel passage; access path and haul road.

Protecting the environment to achieve Biodiversity Net Gain is paramount and we will utilise ecological information and Natural England's Biodiversity Metric 2.0 to generate net gain outcomes. The team are also committed to realising financial, time and operational efficiencies, assessed through a Project Implementation Review and reported using the Environment Agency Efficiency Register, ensuring all savings presented represent exemplar expectations.

Social Value generated is calculated using the TOMS (Themes, Outcomes, Measures) Social Value Calculator, measuring our performance against nationally agreed figures on community involvement, carbon footprint etc. £2million has currently been delivered - this is expected to rise significantly before project completion.



ACHIEVEMENTS

Ecology Plan developed with environmental specialists to ensure exemplary ecological outcome and Biodiversity Net Gain Metric implemented during construction.

Strong ethos and commitment from team to protect the wildlife. Owl kennels, bat boxes and bird feeders cater for diverse birdlife; posters line walkway as reminder to preserve native wildlife.

During construction 28,500 m³ excavation material reused, saving 87,500 radial miles (111,326.25kgCO₂e) and £700k – this will refill the channel. UK sourced, carbon efficient, fish friendly pumps selected (first precast concrete pumps classified as fish friendly due to project).

Biodiversity Net Gain: our metric calculation showed that enhancing 1 hectare of grasslands and 1.5 hectares of reedbeds will achieve our target net gains of 20% increase in grasslands, and a 10% increase in reedbeds.

Great focus on Social Value has generated £2m. Strong relationships developed within the local community, regular communication with village,

donations to local causes and invitations to site. Numerous visits to schools and colleges, extensive sponsorship of local and national charities and sustained support helping unemployed gain employment.

Achievements include:

1,628 people reached through employability programmes,

168 volunteering hours, £1,100 charity donations;

100% jobs advertised locally;

76% workforce local;

100% waste recycled;

241.98kgCO₂e saved by staff living onsite.

IN DETAIL

An engaged team and dedicated Liaison Manager for the project has resulted in significant community engagement. The local community is engaged through social media and monthly newsletters; visits to site; engagement with local primary school (including planned ecology site visit, presentation and bird box building). Good relationships developed with the County and Parish Councils. Use of noise bund and acoustic shield (absorbs 75% of noise) and preaugered sheet piles to minimise noise and vibration levels in the community and regulated hours to minimise disruption (despite having to work to tides) as well as implementation of a traffic plan to ensure less disruption.

We have developed strong links with Department of Work & Pensions, supporting them in schools and through their Jobs4Norfolk initiative. We are passionate about helping those long term



unemployed who face barriers to employment so support Access Community Trust and Norfolk Community College who are part of the Norfolk Opportunity Area/Building Better Opportunities Scheme. We also support HMP Highpoint at events and have initiated a Construction Forum, comprising of construction companies, JCP, New Anglia LEP, local colleges, BounceBack and prison personnel to develop a positive construction offer to their residents. We have engaged over 1600 people in curriculum and employment focussed events and, during COVID, reached out to offer virtual support to all our contacts, resulting in a comprehensive programme of virtual employability and skills training.

We work proactively and closely with numerous schools and colleges and became the first Enterprise Advisor for West Norfolk (Careers Enterprise Company & New Anglia LEP initiative) for two of our local schools (Downham Market Academy and King's Lynn Academy). Our support of the College of West Anglia has been comprehensive – This has involved construction and employability presentations and 150 mock interviews for their construction and engineering students in collaboration with JCP, New Anglia LEP and ASK Apprenticeships – this was due to culminate in Construction Day alongside construction students at ACE Project (a Social Enterprise offering training programmes) – sadly postponed due to COVID19.

We have welcomed 4 work experience students (3 Industrial Cadet accreditation) onto our site; 5 virtual Industrial Cadet work experience students (Learning in Lockdown); involved 6 apprentices and have 1 summer placement planned. We also support the wider community through significant support (volunteering and donations) of the RSPCA, RSPB, Queen Elizabeth Hospital, Food Bank, RAF Association, Royal Voluntary Service and we sit on the Armed Forces and Norfolk Community College Steering Groups.

Our commitment to reducing our carbon footprint can be demonstrated by our pledge to hold Skype/web meetings wherever possible to minimise

travel, saving 4,678.89kgCO₂e and over £20k to date. All team building events are held within a 10m radius. We use tower lights, powerful lighting without noise, emissions and limited distraction to locals – with a lower carbon footprint in comparison to traditional diesel lighting (saving c.307k litres of diesel (899,000kg CO₂e). Light pollution has also been minimised by using PIR lighting accessways and infra-red security control. Energy used on site is renewable (on grid), we have LED lighting throughout (including scaffold bridge) and our drying room houses a dehumidifier, proven to dry clothing 57% quicker than fan heaters, consuming 37% less energy.

We are always looking for sustainable solutions – one of these was the use of Geobind to stabilize soil. It is an environmentally safe alternative to either lime or cement stabilisation as it can be re-treated to make it PH neutral and returned to agriculture – This also resulted in a saving of £65k.

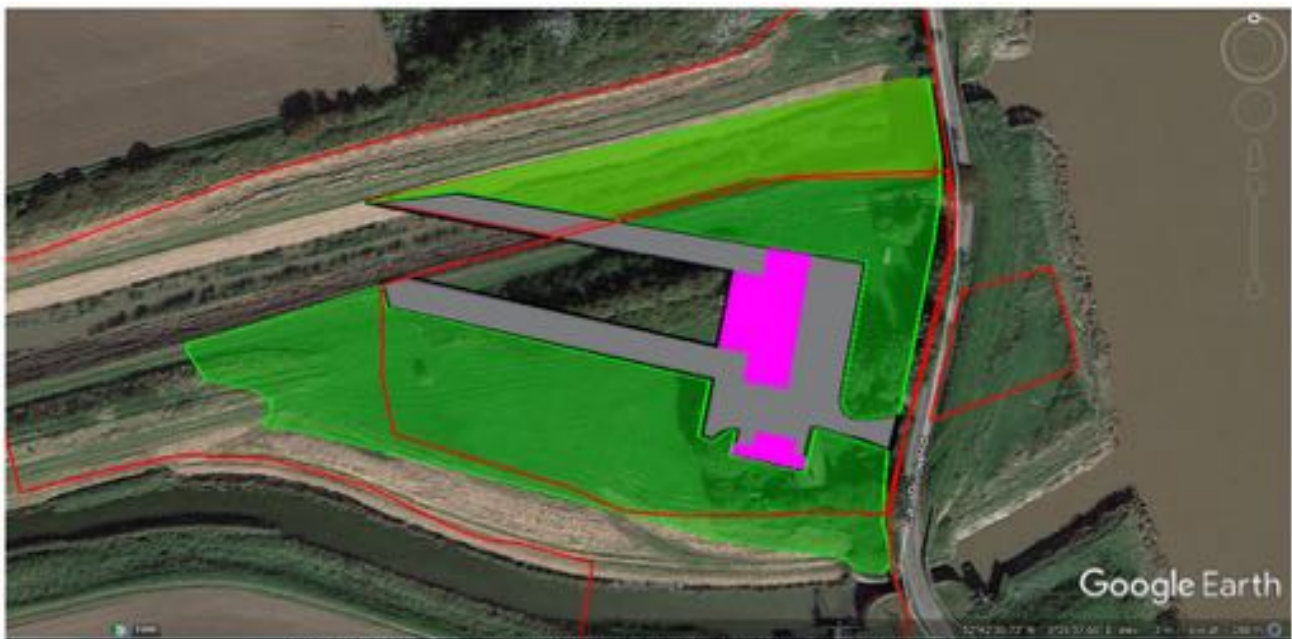
We use Green Rhino Enviropads – these ensure hydrocarbons are captured and encapsulated within the polymer design to prevent spills and drips leaking onto the spill areas (and importantly into the watercourse). This eliminates risk of transporting oil polluted trays, is much more effective and longer lasting than the traditional plant nappies and reduces hazardous waste. A dewatering system was implemented to reduce resources and groundwater and discharge levels are monitored daily. We have made site decking, furniture and planters from recyclable material (pallets).

We are Scheme Partners with CCS – We scored 44/50 and a Certificate of Excellence on our second visit this April, which rates highly against the industry average of 36/50 and it was noted that “the commitment to environmental issues has continued at an exceptional level”. Under community engagement it was noted: “An exceptional level of engagement with the community continually engaging with the neighbourhood and promoting the industry and career opportunities to local organisations and support groups”.

This was essentially a generic construction project, with no requirement for us to achieve Biodiversity Net Gain as part of the Pumping Station construction. However we decided to go above and beyond and use ecological information, together with Natural England's recently published Biodiversity Metric 2.0, to assess and quantify how the Scheme can achieve Biodiversity Net Gain. We presented our Biodiversity Net Gain assessment to our delighted client and produced the Biodiversity Net Gain assessment for free, as we believe all development, no matter how small or large, should generate net gain. Our hope was that our client would apply the Biodiversity Net Gain Metric on future projects, essentially creating a ripple effect to set industry precedents. This is the first time KLDB have used a Biodiversity Metric. "It is a very useful tool. We are required to ensure that we are improving environments on all projects undertaken. It gives a much better idea of a very positive outcome and is definitely something that we will be taking forward in the future". Caroline Laburn, Environmental Manager, King's Lynn Drainage Board.

At the end of the project, we will plant 0.4 hectares of black poplar trees to populate the former channel and create a new wetlands area that will rehome the water voles.

We are all extremely proud of our project and believe that it highlights our commitment to a sustainable development which demonstrates best practice in terms of positive impact on our local environment and community. We also hope that it will serve as a lasting legacy for future similar projects.



Screenshot 3: Showing the planned layout of the new pumping station with planned landscaping

BALFOUR BEATTY

USE OF AN INNOVATIVE SOIL STABILISATION MATERIAL TO REDUCE THE QUANTITY OF AGGREGATE REQUIRED ON THE PROJECT.

AIM

Balfour Beatty Power Transmission and Distribution (PT&D), together with Construction Services UK, are working on the National Grid Mendip 400kV Cables, as part of the wider Hinkley Connection Project. The project involves the installation of 8.5km of underground cable through the Mendip Hills AONB in North Somerset.

As part of the cable works, a temporary compound and haul road was required to enable the construction of a new substation. The initial design required stripping of topsoil and laying a stone hardstanding utilising a geosynthetic system. Poor ground conditions in the area meant that stone

thickness would be in excess of 500mm which posed multiple challenges.

Firstly, the increased stone thickness would result in large volumes of aggregate being imported to site and secondly, as a result of the thick stone layer, a larger area for the storage of subsoil would be required.

This posed the challenge of seeking an alternative sustainable solution which could reduce the amount of aggregate and soil storage space required. Balfour Beatty worked in conjunction with Soil Science Ltd to create a bespoke product that could be used to stabilise the soil resulting in a reduced thickness of stone for the haul road and hardstanding.



ACHIEVEMENTS

The key achievements of this project were;

- 11,000 tonnes of aggregate were designed out as it was no longer required;
- Overall 66% reduction in vehicle movements;
- Eliminated the use of geosynthetics which would otherwise result in large volumes of plastic waste that cannot be recycled;
- Installation time was halved;
- Approximately 142 tonnes of CO2 emissions have been prevented;

- Reducing vehicle movements on the local road network and associated noise, dust and vibration levels; and
- The area of works can be fully decommissioned upon completion with subsoils returned to their natural state in line with DEFRA pH and nutrient indices; and
- Healthy community relationships were maintained by reducing nuisance levels that may have arisen using traditional techniques.

IN DETAIL

What did the project involve doing & why did you do it?

Balfour Beatty PT&D are working on behalf of National Grid to design, construct and commission a new 400kV 8.5km underground cable route from a new CSE compound at Hams Lane, near Loxton, to the new 400kV Sanford Substation. The project is under a Development Consent Order and forms part of National Grid's Hinkley Point C Connection Project, which will connect sources of low-carbon energy, including Hinkley Point C, EDF Energy's new nuclear power station in Somerset, to homes and businesses across the UK. Construction works associated with this stage of development commenced in 2019 and will be completed by 2023.

The 8.5km cable route transects through the heart of The Mendip Hills, which is a range of limestone hills, with steep slopes and an undulating plateau scattered with gorges and



rocky outcrops. The Mendip Hills are designated as an Area of Outstanding Natural Beauty and its unique landscape proved a diverse range of habitats, including grasslands and wooded combs. The cable route also runs the North Somerset & Mendip Bats SAC, designated for its semi-natural dry grasslands, Tilio-Acerion forest and the limestone caves, which provide exceptional foraging habitat and hibernation sites for greater and lesser horseshoe bats. As a result of interfacing with environmentally sensitive areas, it is of critical importance that the project minimises the environmental impact of the works and continually strives to seek alternative sustainable solutions where possible.

An opportunity to implement such sustainable alternatives arose when planning the construction of a temporary compound and haul road near the residential area of Sandford.

The compound comprised a temporary 14,100m² laydown area. The traditional method for installation of a stone laydown area and haul road is to strip the topsoil and lay a hardstanding utilising stone and geosynthetics. This method proved to be unsuitable after surveys revealed the soil conditions in the area to be very poor. Due to the on-site conditions, the main challenges would have included stripping and storing increased volumes of topsoil and subsequent replacement with large volumes of imported aggregate. The project could not accommodate additional soil storage areas because of planning and landowner constraints and the desire to minimise environmental impact on the project.

As a result, Balfour Beatty sought assistance from Soil Science Ltd to identify a sustainable alternative that would reduce the need for large quantities of aggregate, decrease the size of the area required for soil storage and eliminate the plastic waste that would arise as a result of using a geosynthetic system. This alternative came in the form of SUREGROUND™ Reversible Soil Enhancement System which mixes in-situ site soils with a

proprietary binder bespoke to the Mendips 400kV project. The purpose of this product is to stabilise the subsoil and increase the load bearing capacity of the ground.

Prior to implementing SUREGROUND™, extensive testing of the subsoil was carried out. This testing confirmed the nutrient composition of the subsoil and determined the amount of bespoke binder which was required to stabilise the area. This testing process also confirmed that no leachate from the binder would affect underlying soils. Once this composition was confirmed, installation commenced at the Sandford temporary laydown area. The topsoil was first stripped which allowed for 300mm of the subsoil to be rotavated with SUREGROUND™ binder and then compacted. The stabilised subsoil was then capped with an armoured layer of stone bound together with the SUREGROUND™ binder. Excavated topsoil was stockpiled around the compound to be retained for the reinstatement phase upon completion of the project.

By working with Soil Science Ltd, Balfour Beatty were able to successfully install a laydown area and haul road that minimised the environmental impact of our works by reducing imported aggregate, carbon emissions and plastic waste. Upon completion of the site, the area will be reinstated back to DEFRA pH and Nutrient indices.

What did it cost and where did the money come from?

The use of SUREGROUND™ as a sustainable alternative to a traditional stone compound was funded by National Grid as part of the Hinkley Connection Project Mendip 400kV Cables, the cost for the product is similar to the traditional method however the environmental savings were significant. As a competent contractor and employer, both Balfour Beatty and National Grid sought any opportunities to minimise the impact of our works on the communities and environments that they are operating in.

Benefits (*Who and what benefited? Longer term benefits?*)

The main benefits of the project included:

- Balfour Beatty and National Grid halved the programme time for the installation of the compound area and haul road. This helped to reduce the timescale of the works and potential associated nuisance which may have affected nearby residents;
- Reduced volumes of imported stone allowing for excess material to be designed out therefore, reducing consumption of raw materials and the production of waste;
- The amount of soil being excavated was reduced which meant large storage areas for stockpile storage were no longer required;
- Eliminated the use of geosynthetics which would otherwise result in large volumes of plastic waste that cannot be recycled;
- Approximately 142 tonnes of CO2 emissions have been prevented;
- Local residents benefited from the reduction in construction traffic on the local road network as the amount of aggregate being transported to site was reduced; and
- Landowners benefit from having soil returned to its natural state.

Can other organisations / communities benefit from implementing your methods?

The use of SUREGROUND™ is a new innovative solution to constructing haul roads and laydown areas where poor soil conditions are present. The rigorous testing process provided by Soil Science Ltd meant that a bespoke binder was created which allows for the product to be used on any project. The benefits of using this product greatly reduces our environmental impact which is of significant importance to any infrastructure project.

What did you learn from the project and are you planning any further development?

The project provides excellent experience and lessons learnt to both Balfour Beatty and National Grid to enable similar initiatives to be implemented on future projects. Lessons learnt include, but are not limited to, the importance and value of the following:

- Early engagement with National Grid to highlight the challenge and to further devise a solution;
- Exploring alternative sustainable options to provide solutions that was bespoke to the project in order to undertake the necessary works; and
- Collaboration between all interested parties to ensure ecological and archaeological compliance and to help deliver a successful project for the benefit of the wider environment and community.

The success of SUREGROUND™ on the Mendips 400kV project has spread through Balfour Beatty and National Grid and, as a result, other projects including National Grids 400kV overhead line project (Hinkley Connection Project) are now seeking to implement this method.

B&H WORLDWIDE REDUCING CARBON REDUCTION

AIM

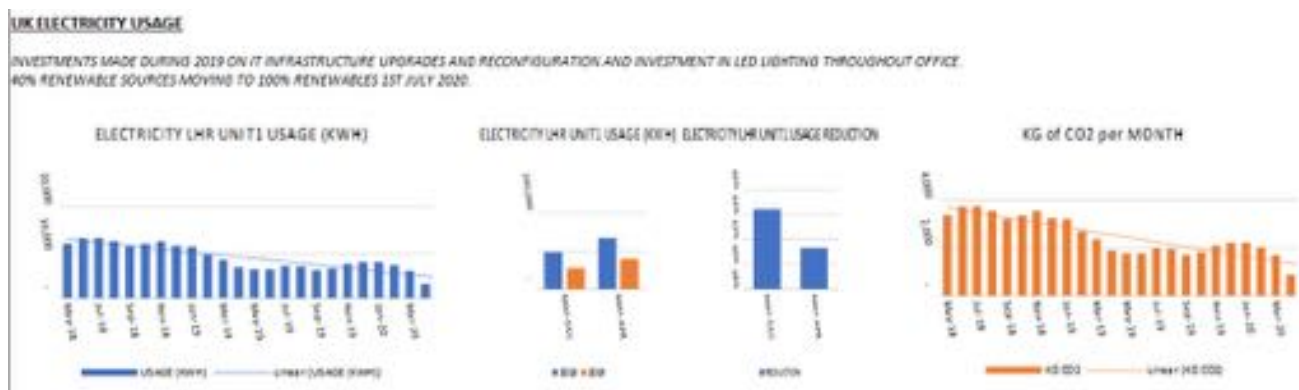
It is well known that the aviation industry is one of the biggest challenges in combating the sustainability agenda as it revolves entirely around air travel which contributes a large amount to the carbon footprint around the globe.

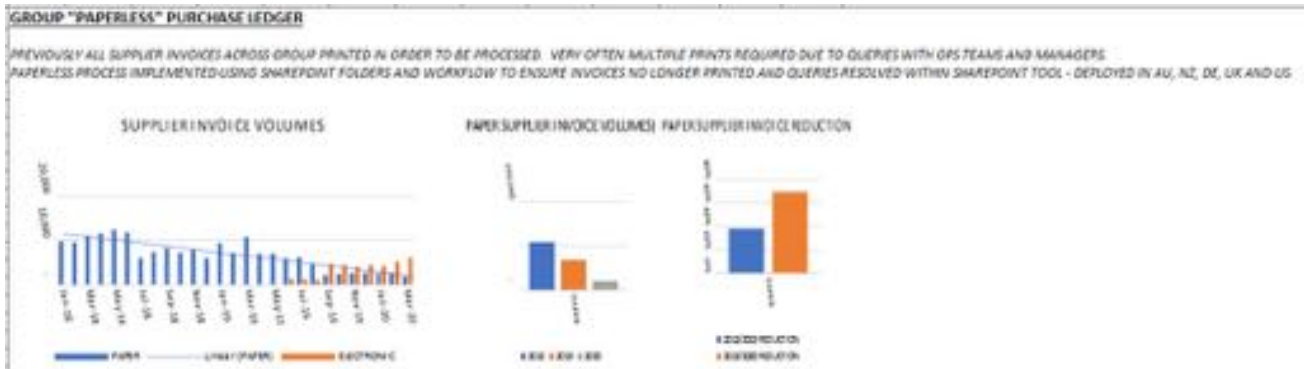
B&H Worldwide have realised that their carbon footprint needs to be reduced and spent the last few years reviewing different approaches to how they can make a difference.

us as a direct result of wishing to work with a solid partner that is committed to sustainability.

ACHIEVEMENTS

Our first step of this project was to introduce an environmental and sustainability policy into the business. Without having such policies, we had no reference and our stakeholders had no guidance to where the business was going and what we were setting out to achieve.





by 82% since January 2018 which is an amazing achievement for the Group and has made a massive difference to our carbon footprint.

IN DETAIL

B&H Worldwide have been concentrating on all our waste reduction but in particularly focusing on paper waste. In an industry which is governed by strict regulations, paperwork is a prime feature for our customers and suppliers ensuring confirmation and proof of our services.

Previously, all B&H Worldwide supplier invoices were physically printed in order for them to be processed. This often included multiple printing due to enquiries from different departments. In early 2019 a paperless process was introduced utilising our Microsoft SharePoint folders. A specific workflow was put in place which meant that invoices no longer needed to be printed and enquiries were resolved through the new system. This has resulted in a reduction of 69% of printing invoices.

We have also managed to reduce our printing of airline airway bills (AWB) during 2019. Previously, all our airline airway bills were printed and sent to our agents. This resulted in a cost of £10 per AWB and the physical printing of the AWB. We have recently signed up with several of our airlines to utilise the Electronic Airway Bill system, which is a solution to remove the requirement of a paper AWB. Therefore, we no longer have a need to print, handle or archive the paper which simplifies the air cargo process,

reduces the volume of printing and also results in a direct cost saving.

In July 2019 we introduced a stricter recycling policy into our Heathrow head office. As much as everyone has their own views on sustainability, it had not been really implemented into the business. We now have recycling stations on each individual floor where employees can recycle all items, including paper, tins and glass.

We have also recently modernised all our vehicles in the UK to lower emissions vehicles in order to reduce our emissions.

In 2019 we invested in our IT infrastructure by upgrading and reconfiguring our long-term improvement plans. The main improvement completed in 2019 was the removal of nearly all the local office servers and moving to centralised and cloud-based services. Historically, every office had dedicated file servers for file storage, login, printing and BoxTop services to each office. Some offices had just one server, and some had several. We have now centralised all these services and have been able to decommission and remove all the remote office servers.

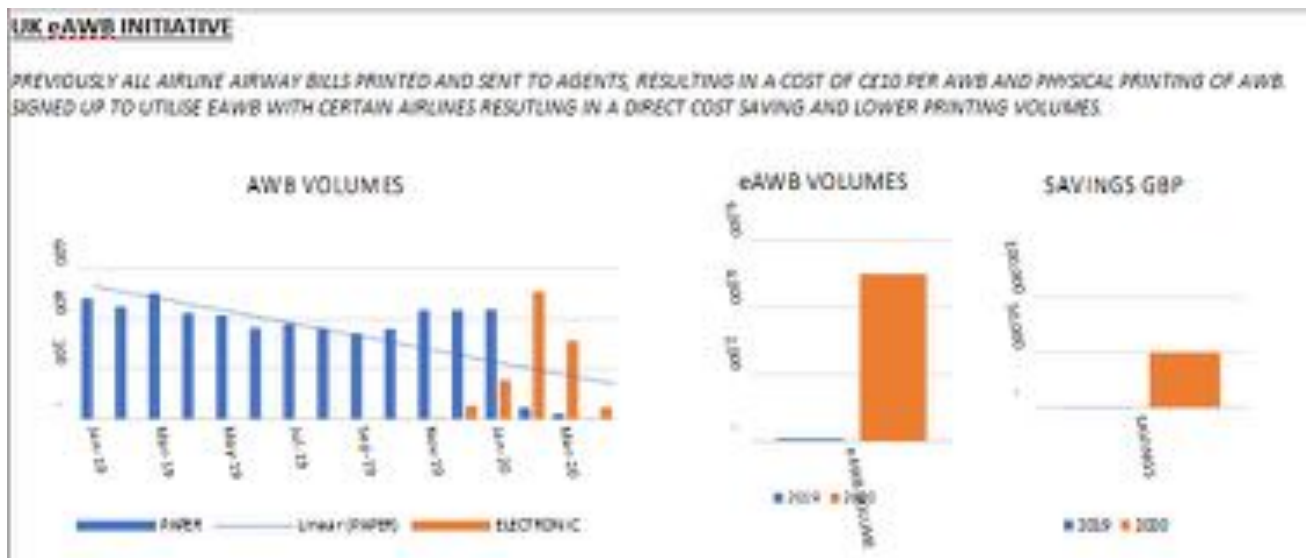
By investing into our IT infrastructure, this has several benefits:

- Greatly reduced usage of power (each server could be using several hundred watts of electricity, and were running 24/7)

- Reduced air conditioning / cooling requirements in each office (most offices needed dedicated air conditioning for the servers)
- Reduced use of tapes and tape storage (previously tapes have to be replaced regularly an old ones disposed of)
- Removed the requirement for purchasing new servers in remote offices and disposal of old servers in future

We also upgraded all the office lighting to LED lighting, both of which have had a significant benefit on our electricity usage. From July 2020 we will be upgrading our renewable energy sources from 40% to 100% through our energy supplier.

All of these schemes are helping our business to perform in a new sustainable way and we are looking to introducing many new schemes this year including trialling electric vehicles and introducing our new volunteering policy to help engage our employees with the local community.





LEADERS IN AEROSPACE LOGISTICS



BEST-IN-CLASS 24/7 AEROSPACE LOGISTICS

B&H Worldwide play a vital role within the aerospace community, boasting a proven track-record of delivering exceptional AOG, critical and routine logistics services.

We provide customers with specialised solutions for handling critical parts, from aircraft engines and specialist avionics through to components and consumables.

B&H Worldwide is proud to have been awarded a Green Apple Award for Environmental Best Practice and to be named a Green World Ambassador by the Green Organisation.

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BHARAT ALUMINIUM COMPANY LIMITED

SPECIFIC POWER CONSUMPTION REDUCTION IN POTLINE - BALCO

AIM

We at BALCO want to be a world class Integrated Aluminium and Power producer generating sustainable value for all stakeholders. We are representing POTLINE- a critical business unit in aluminum production process.



We have achieved milestones by improving operational efficiency and reducing specific power consumption, thus reducing carbon footprint.

We are the lowest power consumer (kWH/MT) in Indian aluminum smelter and we thrive to achieve more on this front by constant in-house innovation and technological collaboration with world class business partners.

ACHIEVEMENTS

We have achieved specific power consumption reduction in potline area at BALCO through various initiatives, which are as follow: We initiated potline energy conversation with our in-house innovated

and patented Fuse Technology in year 2010. Then we converted split beam to single beam to improve operational efficiency.

Then we improved our cathode design from 30% graphite to 100% graphite and we upgraded the pot controller, which reduced the specific

power consumption in pot line drastically. Other initiatives include, clamp drop reduction and use of low pressure compressed air in Fume Treatment Plant, which also reduced power consumption further.

Along with the technological advancement, we also worked on operational efficiency by conducting design of experiment. These activities helped us achieve DC power consumption from 13570 kWH/MT to 12872 kWH/MT, 698 Units which gives as total saving of \$28.4/MT and thus

reduced GHG intensity from 18.5 to 17.4 CO₂e/MT from FY-16 to FY-21.



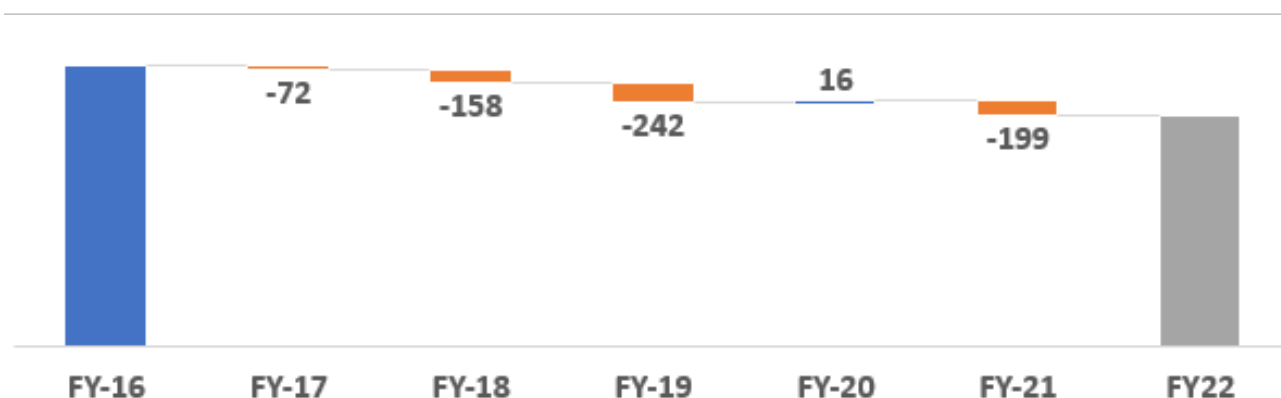
PANDIT NEHRU THEN PRIME MINISTER OF INDIA SIGNING AGREEMENT WITH USSR, FORMALLY STARTING KORBA ALUMINIUM PROJECT. (FORMER NAME BALCO)

Way Forward:

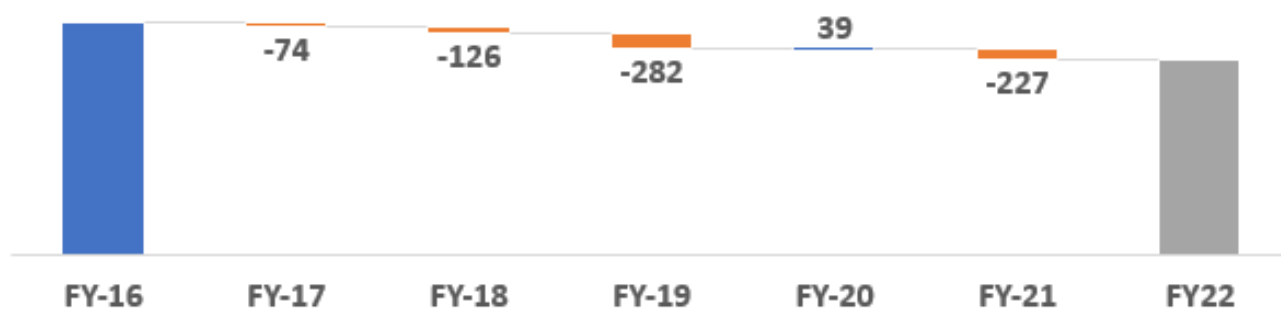
We are planning to achieve SPC target of 12000 KWH/MT for which we have started pilot initiatives in potline at BALCO.

- Use of RUC (Ready to use) in potline, which further reduces cathode drop and thus overall efficiency increases
- Increase in slot height of anode blocks
- Technological upgradation in Potline controller

IN DETAIL



In Balco reduction DC power consumption from 13570 KWH/MT to 12872 KWH/MT, 698 Units which gives as total saving of \$28.4/MT.



In Balco reduction in power consumption from 14206 KWH/MT to 13459 KWH/MT, 747 Units which gives as total saving of \$28.7/MT.

BIOTEM TEMİZLİK EMLAK VE INSAAT HİZMETLERİ TİCARET

INCREASING THE ENVIRONMENTAL AWARENESS RATE FOCUSING ON ZERO WASTE MANAGEMENT SYSTEM AND ENVIRONMENTAL BUSINESS MODEL & RECYCLING OF WASTE MATERIALS

AIM

As announced in the United Nations Sustainable Development Goals, businesses have a fundamental responsibility to maintain certain practices that respect the dignity of individuals, the rule of law, and the natural ecosystems at the heart of our lives and society. From this aspect, BIOTEM has participated in the Zero Waste Management System and UN B impact assessment & SDG Action Management to manage proactively these issues.

Our application has two stages:

Stage 1. Increasing the Rate of Environmental Awareness Focusing on Zero Waste Management System and Environmental Business Model

Stage 2. Recycling of waste materials

IN DETAIL

Company Profile:

BIOTEM is a family-owned business and has been established on February 16, 1993, to operate in the service sector.

Our company conducts numerous works such as indoor and environmental cleaning services, facility management services, pest control services, garden maintenance and landscaping services, payroll, and support services.

biotem

certified environmental volunteer
Sn: Mahsumi Kanat
Volunteer Certificate Number: (BIOTEM 202001)
As Biotem Corporate Services Family, we would like to thank for your contributions that you have successfully completed the Education you have taken for the Conservation of Natural Resources and leaving a livable world for the future generations and the sensitivity you have shown in creating environmental awareness and by recycling environmental wastes.
Biotem Service Center at Etiler - Beşiktaş - İstanbul Tc: 343 36
General Manager
Signature: (Signature)
Date: 16/09/2021

Every Biotem Employee is a Certified Environmental Volunteer.

www.biotem.com.tr

26 Years of Experience
312 Employees
10,946 Personnel
100% Satisfaction

biotem
Sustainable Organization

Our company prioritizes quality service and customer satisfaction. Our Quality Policy is based on this approach. We have had ISO 9001, ISO 14001, ISO 10002, ISO 18001/ 45001 Quality Certificates since 1997.

We, as Biotem, have always strived to maintain the satisfaction of our valuable clientele and employees at the highest level within the framework of the cited standards. Our company has adopted the principle of furnishing the best and highest quality service with more than 550 employees in contracted projects.

BIOTEM has adopted international recognized environmental policies and UN SDG to achieve global accepted environmental approaches with promoting our commitment to sustainable development and to ensuring the promotion of an economically, socially, and environmentally sustainable future for our planet and for present and future generations.

Our Environmental Policy Statement:

BIOTEM TEMIZLIK EMLAK VE INSAAT HIZMETLERI TICARET LIMITED SIRKETI is a sophisticated, state-of-the-art cleaning and facilities management organization working to the highest quality standard. Its mission is for all staff to work as a team to provide our customers with the best and safest service that we can provide.

At BIOTEM TEMIZLIK EMLAK VE INSAAT HIZMETLERI TICARET LIMITED SIRKETI, we are committed to minimizing the environmental impacts of our activities on the environment.

To achieve this aim, we are committed to minimizing the waste of materials, substances, and energy.

We are also committed to purchase and use materials, substances, and equipment that are environmentally friendly and minimizes environmental impacts, and the prevention of pollution under ISO 14001:2005.

In our workplace and through this environmental policy statement, we commit to comply with applicable legal requirements and other requirements imposed upon us which relate to our environmental aspects, whilst continually improving the effectiveness of our management system and to the recycling of materials and substances to increase the portion of recycling and waste minimization each year.

This policy statement provides the framework for setting and reviewing our environmental objectives and targets through our plan and is communicated to all persons working for the company and displayed for the public to view.

We regularly review our activities to bring about better outcomes in our environmental performance.

We are committed to maintaining natural resources and to delivering cleaning services that do not negatively impact the environment. BIOTEM can meet this objective by constantly educating our workforce as to the prominent level of environmental management that is expected.

PROJECT DETAIL:

As announced in the United Nations Sustainable Development Goals, businesses have a fundamental responsibility to maintain certain practices that respect the dignity of individuals, the rule of law, and the natural ecosystems at the heart of our lives and society. From this aspect, BIOTEM has participated in the Zero Waste Management System and UN B impact assessment & SDG Action Management to manage proactively these issues.

Our application has two stages:

Stage 1. Increasing the Rate of Environmental Awareness Focusing on Zero Waste Management System and Environmental Business Model

Based on the Ten Principles of the UN Global Compact, we have commitments to human rights,

positive workforce practices, environmental management systems and good governance.

To demonstrate our commitment to sustainable development and to promote an economically, socially, and environmentally sustainable future for our planet and current and future generations, we applied for the B Impact Assessment as Biotem and participated in the SDG Action in 2020.

In this context, the highlights are Governance, Employees, Community, Environment, Customers.

We focused on the Environmental Business Model for positive environmental impact. This Model requires Environmental Management including Plant Environmental Efficiency and Environmental Management Systems, Air and Climate, Water, Land and Life.

Ten Principles of the United Nations Global Compact based on Human Rights, Labour, Environment, and Anti-Corruption.

To achieve our goals, we conduct new training to increase Environmental Awareness and Waste

Management Systems. All our Employees and Managers participate in Environmental Health and Safety (EHS) Training and are part of the Zero Waste Project. Every Biotem Employee is a Certified Environmental Volunteer.

BIOTEM has a total of 550 Employees and Managers competing to achieve our goals.

Within the scope of Zero Waste Project and Environmental Awareness Training, Environmental Volunteer training activities are organized.

Between 2019 and 2021, a total of 360 personnel participated in 6 hours of Training on Environmental Awareness and Zero Waste applications. In 2021, 110 personnel were given 6 hours of training on Environmental Awareness and Zero Waste applications within 6 months.

Our Objectives in Environmental Volunteer Training are,

- Ensuring Zero Waste Management Training,
- Participation and Awareness in Environmental Research,

Recycling of waste materials
Place of Worship (40m² Mosque construction with two compartments)



www.biotem.com.tr

**26**
Mosque

**312**
Personnel

**10.946**
Personnel

**100**
Recycling



- Participation in Environmental Trainings, and Recommendations,
- Zero Environmental Accidents.

The Training within the scope of Environmental Awareness and Zero Waste Management is organized according to the following topics, and Environmental Volunteer Certificates are issued to the person who has completed their training.

1. What is Zero Waste?

“Zero Waste” is a goal defined as waste management philosophy that involves preventing the wastage, using the resources more efficient, reviewing the reasons for waste formation, preventing, or minimizing waste formation, and collecting and recovering waste at source separately.

Advantages achieved by based on zero waste approach;

- Increasing productivity,
- Improving performance due to clean environment,
- Reducing costs as waste is avoided,
- Reducing environmental risks,
- Ensuring that the institution has the title of “environmentalist.”

2. What is Zero Waste Legal Legislation?

- Waste Management Regulation
- Zero Waste Regulation
- Mall, Business Center, Business and Plaza Guide
- Corporate and Organizational Guide
- Guide to Organized Industrial Zones and Industrial Facilities

3. How to install Zero Waste System?

- Determination of Focal Points
- Determination of Current Situation
- Planning
- Identification of Needs & Supply
- Education & Awareness
- Application
- Reporting

4. What are the types of waste and how is the separation of waste done?

- Paper Waste
- Wood Waste
- Plastic Waste
- Glass Waste
- Composite Waste
- Metal Waste
- Vegetable Waste oil
- Organic Waste
- Electronic Waste
- Waste Battery

5. What are the problems encountered and their solutions?

In the projects we work within the scope of Zero Waste Management, there are colored and defined waste containers for hazardous and non-hazardous waste in office and factory operating areas. Waste collected by BIOTEM separately from these areas is transported to temporary waste storage areas. The collected wastes are stored and recorded separately in the temporary storage area according to the types of waste. Biotem is responsible for zero waste management in coordination with environmental

management departments and the 550-person Biotem team participates in zero waste management.

We have created a reward system to achieve our goals. In this context, we aimed to distribute 5% of our revenue as a reward to our successful Environmental Volunteer Employees at the end of this fiscal year.

Stage 2. Recycling of waste materials

By recycling waste materials, we have done some construction and arrangements for all people to use in the recreation areas operated by our company. The works done by recycling waste materials are presented below.

1. Wooden Café

The café consists of a single-storey indoor area with a size of 100 m² and an open area of 400 m² as wood dressing on steel profiles.

Materials Used in The Structure

- Steel Profiles: It is made from scrap metals found in the scrap area.
- Wood materials: All of the materials (including walls and tables) consist of wood that is scrapped and comes to the scrap site.
- Windows: The Windows obtained from the recycling of aluminum materials in the waste area.
- Thermal Insulation Materials (Roof and Wall): It is made by recycling the insulation materials in the waste area.
- Wooden door (4 pieces): With the reassessment of waste wood, door cases were made and started to be used again.
- Kitchen cabinet: The kitchen cabinets that were worn out and sent to the waste area were repaired and reused.

- Granite marble on desk: Other used products left over from renovations.
- Electrical cables: Surplus cables thrown at the scrap site were used.
- Heating honeycombs: Obtained from the recycling of unused materials.
- Heating plate and heating installation: Evaluated from scrap materials.
- Workforce: made using the current working day.

2. Place of Worship (40m² Mosque construction with two compartments, Male and Female)

- Steel construction and porch materials were used on the roof.
- The walls are built with a dating Ytong.
- The exterior wall covering is made of pallet wood.
- The interior wall covering is made of laminate flooring, which remains in the hand.
- Suspended ceiling building renovations and ceiling materials are used.
- The pavement coating is made with facade coating left over from environmental renovations.
- Lighting system and wiring are used from exit materials.
- The carpet is provided from the previous projects of our company with unused carpets.
- The Alem (Roof Sign) was made by cutting aluminum from the scrap site.
- Existing workforce was used in its construction.

3. Toilet construction in the picnic area

(60 m² WC consisting of six compartments, WC, two ablution houses, six sinks and a cleaning room, male and female, was constructed.)

- Steel construction and porch materials were used on the roof.
- The walls are built with dating YTONG. Wall materials have been purchased.
- The exterior wall covering is made of pallet wood.
- Part of the interior wall, tile and floor ceramic coating is provided from ceramics in the warehouse; some of them have been purchased.
- Suspended ceiling building renovations and ceiling materials are used.
- The lighting system and wiring are made of out-of-the-way materials.
- Dating products are used for plumbing materials.
- The roof is a wooden roof and is made of wood that is removed from the pallet.
- Existing workforce was used in its construction.

4. Signposts

Waste materials were recycled and building promotion and directional signs were produced.

5. Wood Transformation

By Renovating and Painting from Wooden Materials collected from the Waste Area.

- Bench
- Picnic Table
- Camellia
- Facade Coating, etc.
- Recycled and construction operations were carried out at zero cost.

OUTCOMES AND BENEFITS OF THE PROJECT:

We aimed to be a company that achieves the goal of a better world and increases environmental awareness among its managers and employees. We aimed to reorganize BIOTEM to contribute to the Sustainable Development Goals.

We spent \$1,250 on training. However, thanks to the Biotem Environmental Volunteers, we have received more than we have spent.

As an example, as a result of our work in 2021.

- 155 tons of Paper waste was collected, and 2,635 trees were saved from being cut down.
- 125 tons of metal waste collected and 11,825 Kg. Greenhouse gases prevented.
- 14 tons of plastic waste was collected to save 80836 Kwh of energy.
- Three tons of glass waste were recycled, 16.5 M3 storage space was provided.

The environmental awareness rate of employees is monitored by surveys. According to the survey results, a detailed analysis is conducted by the environmental management department. In June 2021, the awareness rate increased to 87% due to the latest survey.

The above-mentioned projects costed \$ 32.000. As a result of our work within the scope of recycling in 2020 we saved \$27,250.

BIRMINGHAM AIRPORT TO BE PROUD OF EVERY JOURNEY

AIM

Birmingham Airport is the 7th largest UK Airport, with around 50 airlines flying 12.5 million passengers (in a normal year) to more than 150 direct destinations. Our Corporate Purpose is “To be proud of every journey” and we’ve adopted a practical and responsible approach to our social and environmental responsibilities.

In 2015 we recycled just 32% of the materials we disposed of. The goal we set ourselves was to increase this to 65% by December 2020. To achieve this we needed to:

- 1) Analyse our waste composition and identify areas for improvement
- 2) Launch an employee engagement programme, creating buy-in for our sustainability goals
- 3) Improve source segregation for more materials
- 4) Maintain a Zero landfill solution

ACHIEVEMENTS

We produce 21 differing waste streams at the airport generating circa 2,400 tonnes a year. In the summer of 2019 Novati’s on-site Sustainability Manager spent the first few months of his time with us reviewing our processes, analysing waste compositions and mapping disposal routes.

Our goal was clear; increase recycling to 65% by December 2020. In addition, we wanted to reduce

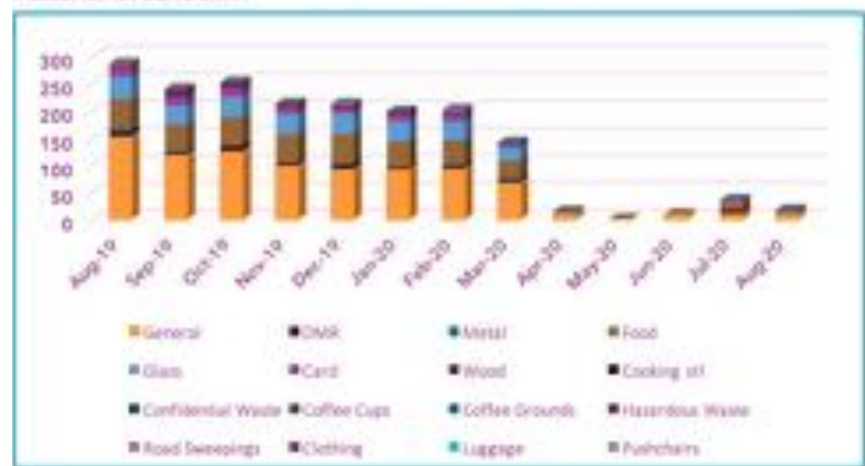
our carbon footprint by working with Novati’s supply chain to ensure materials travelled the lowest possible mileage.

Novati’s Sustainability Team supports a sustainable transition to an inverted hierarchy and means we must first move through a diamond hierarchy. We don’t want to see any material going to landfill and

We recycle 9 separate waste streams



Material Breakdown



we want to ensure we recycle wherever possible.

Throughout this submission we will demonstrate how we’ve Reduced, Reused and Recycled more of a valuable natural resources than ever before.

IN DETAIL

STRATEGY

The Airport is a key driver in the regional economy, where our current net economic impact is estimated at circa £1.5B and a total of 30,900 jobs. Our Sustainability Strategy outlines our achievements and future aims, ensuring we remain a responsible neighbour and reduce our environmental impact.

We understand that limited material resources and growing consumption patterns represents a global

challenge and we have a long-term ambition to embed the circular economy into our business and beyond. To date, we have focussed on waste;

Reducing where possible,

Re-using materials and

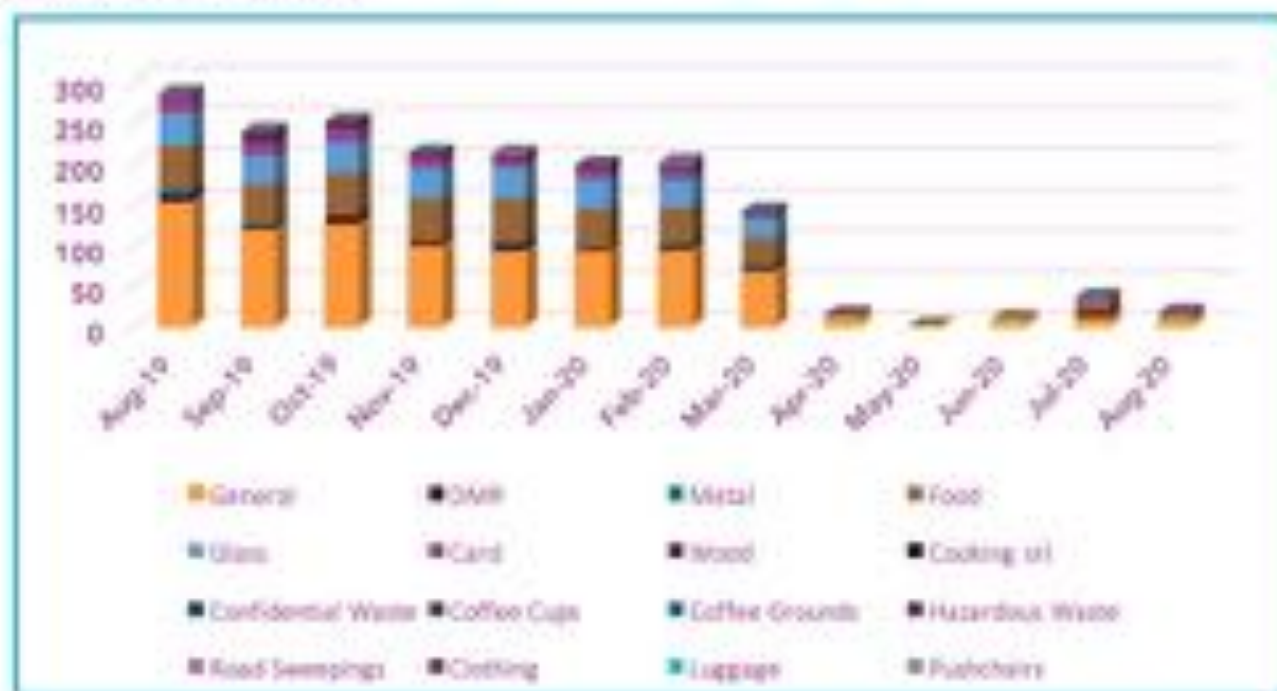
Recycling as much as possible.

We understand that creating waste is an inevitable consequence of the operation of our Airport and we know we must take active steps to minimise the amount we produce and to recycle whatever we can.

We recycle 9 separate waste streams



Material Breakdown



In 2019 we partnered with Novati to help us invert the waste hierarchy. We needed new solutions to help us minimise our environmental footprint.

FUTURE PLANS

- 1) Utilise tech which tracks the volume and weight of material produced by each retailer, department or passenger zone.
- 2) Promote a site-wide reduction in single-use plastics
- 3) Reduce food wastage per passenger
- 4) Focus on full life-cycle impacts of products we procure

IMPLEMENTATION

We produce 21 waste streams at the airport generating circa 2,400 tonnes p.a. In the summer of 2019 Novati's on-site Sustainability Manager spent the first few months of his time with us reviewing our processes, analysing waste compositions and mapping disposal routes.

Our goal was clear; increase recycling to 65% by December 2020. We also wanted to reduce our carbon footprint by working with Novati's supply chain to ensure materials travelled the lowest possible mileage.

Some of the processes we've implemented to invert the waste hierarchy include:

REDUCE

- Installing Hydration Stations to reduce the amount of single-use plastics generated from water bottles.
- We've added a "Plastics Free" clause in new commercial contracts and developed internal/external campaigns to highlight the importance of plastics reduction.

REUSE

- We've partnered with Newlife, the charity for disabled children. Suitcases are donated and

re-sold through their stores. Profits go towards the provision of essential equipment.

- We've partnered with Bags of Hope UK to improve the experiences of children and young people in the care system by donating abandoned bags.
- Abandoned clothing & buggies are donated to the Salvation Army
- Donating surplus food and machines to local charities

RECYCLE

- Source segregation of 9 streams; Food, Glass, DMR, Cardboard, Metal, Wood, UCO, Coffee Cups & Grounds.

In January 2020 we implemented coffee cups and grounds recycling. We believe that we're the UK's first airport to achieve this.

RECOVERY

- Send all remaining waste for Energy Recovery

RESIDUAL LANDFILL

- Zero landfill since 2015.

ENGAGEMENT

Novati's Sustainability Manager spends 2 days every week at the Airport engaging with our teams. We've delivered training to our waste operatives to ensure they identify potential contamination issues and take appropriate actions to deal with the root cause of the issue.

We've delivered toolbox talks with concession holders and staff to ensure everybody understands the impact they have and contribute to positive environmental change.

Key stakeholders attend a monthly meeting to discuss performance, challenges and solutions to ensure we remain on target against our environmental goals. All Stakeholders meet quarterly to discuss wider sustainability issues affecting the business.

At a 1-2-1 level we have also engaged concession holders to make sure they recognise the difference between food stuffs that have exceeded their use-by date and those that have simply exceeded best-before dates. For the former, the material is all processed as food waste and is sent for treatment via an anaerobic digestion facility. For the latter, we have partnered with Unite 4 Homeless to donate surplus stock rather than seeing it 'go to waste'. Every month we are seeing greater engagement and uptake for this scheme that supports our local community.

Novati's supply chain were all selected to collect and treat the materials we generate because they are both locally based, and use local processing facilities. Agreeing clearly defined disposal routes was essential in ensuring we reduce waste mileage and the associated carbon footprint we create.

RESULTS

REDUCE

- When we are back to normal trading patterns the Hydration stations will save the use of tens of millions of plastic bottles every year.
- The 'plastics free' clause is in its infancy so we are unable to quantify results given the downturn in trade during the pandemic.

REUSE

- The luggage donated to Newlife has been resold generating circa £10,000 to go towards the provision of essential equipment.
- Circa 550 abandoned bags have been collected by Bags Of Hope UK and given to young people in the care system and will play a small part in helping to relieve the anxiety associated with moving through the foster system.
- We have donated approximately 3 tonnes of clothing and 270 buggies to the Salvation Army.
- 4 tonnes of surplus stock has been sent to Unite 4 Homeless

- A Mickey Mouse interactive console from our Sky Zone centre was refurbished and will be donated to Birmingham Children's Hospital when covid restrictions allow.
- 2.7 tonnes of other products including books, clothing, toys, games etc. valued at £16,000 donated to charity

RECYCLE

- In January 2020 (pre-pandemic) we segregated 3.1 tonnes of coffee grounds which were converted into heat logs which act as a substitute for fossil fuels
- 33,000 coffee cups were segregated in the first month. Post pandemic, we expect to recycle 350,000 + p.a.

In August 2020 we achieved a 66% Recycling rate. This is the first time we've ever achieved and exceeded our target of 65%.

SHARING KNOWLEDGE

We always welcome the opportunity to share knowledge and our approach to sustainability. Novati have published no less than 4 news stories about our work and our press release for World Environment Day 2021 has been used across several digital media platforms.

BIZERBA (UK) ORGANIC LABELS

AIM

Create a sustainable food label without backing paper / Linerless that will decompose without impacting on the environment



ACHIEVEMENTS

An eco-friendly label solution for sustainable labelling of products.

Manufactured from organic raw materials the Bizerba organic film labels provide excellent adhesion even in most difficult ambient conditions. An outstanding print result ensures a high quality brand image of your product.

Bizerba organic film labels are made of sugar cane granulate. This organic raw material actively contributes to environmental protection.

IN DETAIL

An eco-friendly label solution for sustainable labeling of your products.

Manufactured from organic raw materials the Bizerba organic film labels provide excellent adhesion even in most difficult ambient conditions. An outstanding print result ensures a high quality brand image of your product. Organic film labels. An eco-friendly label solution for sustainable labeling of your products.

Bizerba organic film labels are made of sugar cane granulate. This organic raw material actively contributes to environmental protection. By using our organic labels, you reduce oil consumption without having to compromise on outstanding properties:



The white organic film can be processed and printed like any standard PE film. The labels smoothly stick to the package surface and reliably adhere to it even under mechanical stress. This is possible by means of an acrylate-based permanent adhesive, which is also suitable for direct contact with food.

Our quality labels ensure a high surface protection against water, alcohol, solvents and grease. Matching your needs we will create an individual solution for you.

Multi-coloured preprints as well as varnishing, embossing and many other refinements or adaptations are possible. All of our labels are food safe labels. Help us to reduce the landfill waste and insist on organic labels for your industrial manufacturing plant or even in your local shop.

We are implementing sustainability into everything we manufacture not only our labels but also our

machinery and care products. As a family run business, it is important to us to strive to be as environmentally friendly as we can. At the same time we appreciate, there is an added cost implication.

Therefore, this may not be an option for all businesses. If you are looking for an eco-friendly labelling solution then look no further, we can tailor a labelling solution to meet your requirements.



BMMJV & ENVIRONMENT AGENCY BOSTON BARRIER

AIM

Boston, a market town in Lincolnshire with an important maritime history; has experienced nine major instances of tidal flooding in the last 200 years, with over 800 properties flooded across 55 streets in 2013.

Rising sea levels and increasing instances of extreme weather due to climate change will result in the standard of protection diminishing further without intervention. Alongside the physical hazard, the town is ranked as the 66th most deprived council area in England with one of the lowest weekly wages in the country.

Post-flooding surveys in Boston in 2013 found that 98.8% of respondents did not have contents

insurance, increasing the economic vulnerability of individuals and businesses to flooding. High flood risk and lack of resilience has resulted in the town struggling to attract investment, restraining regeneration of the town.

The Environment Agency's (EA) Boston Barrier Project seeks to address this and will protect more than 14,300 homes and 582 businesses from tidal flooding on completion.

The Boston Barrier project and associated works will provide one of the highest levels of tidal flood protection in the UK outside London and have significant beneficial effects for the community by encouraging investment, improving resilience, well-being and protecting historic assets.



ACHIEVEMENTS

The Boston Barrier scheme, which began construction in 2017, provides continuous impermeable protection from tidal surges via a combination of floodwalls and gates and contributed nearly 5% of the EA's National Target for over 300,000 properties better protected against flooding by 2021.

The main project element, a 26m rising sector gate, was declared operational in late 2020 therefore 13,700 properties are now better protected from tidal flooding.

Over £100m is secured through Government Flood Defence Grant in Aid funding, with long-term net present value benefit expected to exceed £1.1 billion. Project successes have been monitored and evaluated against the United Nations Sustainable Development Goals (UN SDGs).

Using the goals has enabled identification and implementation of savings in cost, carbon and time and the scheme has been found to contribute positively to all 17 goals.

Going beyond physical protection from climate hazards, the Boston Barrier project is an example of how climate-adaptation projects can deliver wider social outcomes. This is key to providing local social, economic, and environmental capacity to help build communities' resilience to climate stresses, as well as aiding sustainable development.

The project is setting a new benchmark for flood defence through innovation, community involvement and seamless digital delivery.

IN DETAIL

Climate change causes rising sea levels and increased risk of extreme weather events; both increase the risk of tidal surge events to Boston.

The Boston Barrier Scheme will provide resilience to more than 14,300 homes and 582 businesses for tidal surge events of up to 1 in 300-year magnitude including predicted sea level rise over the next 100 years.

Key project elements:

- A 362t, 26m wide and 11m high rising sector gate; the primary barrier
- Control Building for barrier operation and maintenance
- A 18m wide and 11.5m high pair of vertical sector gates to complete flood wall protection around the Port of Boston
- Over 2.3km sheet piled flood walls along the banks of the River Witham

Innovation

The primary barrier is housed in a substantial 6000m³ reinforced concrete structure.

The concrete formulation is fundamental to ensure sufficient durability over its 100-year design life. The concrete mix selected for this structure incorporates 70% ground-granulated blast-furnace slag (GGBS), a by-product of the iron industry, as a cement replacement.

120t of cementitious materials were saved across this structure, removing 1250t of embedded carbon dioxide emissions thereby supporting the EA's goal of achieving net zero by 2030.

The Barrier Control Building houses controls including emergency generators; therefore, resilience to flooding is critical.

The initial design proposed waterproofing the entire structure and designing the foundation to provide resistance against floatation in a flood event. Inverting the concept of the building by moving critical plant onto the first floor achieved the required level of resilience and enabled deletion of 70 piles.

This saved £300,000, 360t of embodied carbon and seven weeks of programme.

A key innovation of the scheme is the use of the United Nations Sustainable Development Goals (UN SDGs) as a basis for monitoring and evaluating the project's success using a methodology developed by the Boston team.

This allowed the embedding of social, economic, and environmental considerations throughout decision-making to identify savings and fully understand the scheme's societal benefits.

This has maximised the project's sustainable development outcomes across all 17 goals, resulting in positive impacts to wider society far beyond flood protection.

Social Benefit

After the 2013 flood, 114 households approached being homeless or needing housing advice.

By protecting thousands of properties from tidal flooding, the scheme reduces exposure to extreme climate-related tidal surge events. This scheme reduces exposure of properties to extreme climate events, thereby supporting the local council in making informed decisions on local regeneration and investment in the area.

Boston's unique cultural and historic context was central to informing project decisions on social outcomes. Numerous community engagement campaigns were held across seven languages, to ensure the inclusion of the town's diversity and Eastern European community.

Key outcomes included enhancement of Macmillan Way, a long-distance trail adjacent to the barrier site, which has been landscaped to provide access not previously available for those with mobility issues and include maritime motifs along the footpath's flood wall to recognise Boston's seafaring history.

Environmental Benefit

In addition to increasing accessibility along Macmillan Way the team have supported Boston Borough Council's local public landscape project by commissioning local woodcarvers to create a sculpture trail from reclaimed buoys and wood found when dredging.

Further, wildflower seed grass mix has been used along the path and the nationally rare Boston Horsetail has been reintroduced after cuttings were propagated before construction began.

The project has incorporated mitigation measures to protect a local population of Peregrine Falcons from nesting near the site. This has been achieved by incorporating non-invasive anti-nesting tactics, including strategic placement of brightly coloured footballs to ensure the falcons' safety throughout the project progression.

Economic Benefit

The £100m scheme is deemed a 'National Priority Project' and is fully funded by Government Flood Defence Grant in Aid. By sourcing suppliers and materials from within a 50-mile radius, more than £7m has been re-invested so far into the local economy from the construction works.

Reduced flood risk to 582 local businesses will reduce the likelihood of businesses undergoing long recovery periods following flood events which restrict their functionality, often meaning temporary or permanent job losses. It is anticipated that improved confidence in business continuity will encourage local investment and the development of new employment opportunities within Boston.

The long-term net present value benefits of the barrier have been estimated to be over £1.1 billion.

Staff Commitment

The scheme is led by the EA, with design and build services provided by BMMJV, a BAM Nuttall and Mott MacDonald joint venture.

Personnel across this collaboration have endeavoured to deliver above and beyond the minimum stated requirement and the highest benefit to the local area as evidenced above. Designs were optimised to obtain the most value from the capital investment whilst reducing the carbon content of the scheme, with positive design interventions continually recorded and shared with other EA schemes, nationally and internationally.

Future Development and Applications

It is anticipated that the use of the UN SDGs will become standard practice for both the EA and BMMJV in future and they have now been incorporated into the National Flood and Coastal Erosion Risk Management Strategy across England.

The goals are not specific to construction, therefore a key benefit of the methodology developed is the provision of a universal language for assessing and demonstrating sustainable societal outcomes which can be adopted across all sectors and discipline boundaries.

Mapping the goals to climate adaptation projects in the optioneering and initial design stages has the greatest opportunity to influence project scope and benefits. Other aspects of the scheme such as bespoke community engagement, collaboration across multiple organisations with the help of Building Information Modelling and bespoke Common Data Environments can be applied to a great many disciplines to make savings.

Recognition

In the last year the scheme has been recognised as an exceptional project, successfully winning four regional and two national awards, including the prestigious ICE Edmund Hambly Medal for sustainability and most recently the Large Project and Sustainability categories within the ICE East Midlands Merit Awards 2021.

BNP PARIBAS REAL ESTATE

RAISING OCEAN HEALTH AWARENESS INTERNATIONALLY IN 2019

AIM

The aim of the partnership between BNP Paribas and EVORA was to develop and implement a strategy that would improve the sustainability performance of Belgrave House.

Belgrave House is a centrally located prestigious office building in London which houses key tenants including Google and American Express.

Whilst energy is the most obvious area for building performance improvement (and has formed part of the focus of the sustainability strategy), the management team of Belgrave House has also recognised the opportunity to engage with occupants and contractors of the building and external overseas connections to raise awareness with respect to understanding of the global crisis associated with plastic wastes in the oceans with aims to:

- 1) encourage more sustainable behaviours
- 2) encourage people to re-evaluate the impact their actions have upon the environment and
- 3) to get people to truly buy into and begin the long journey to conserve our planet for the future.

ACHIEVEMENTS

The entire building management team, EVORA (external consultants), on-site contractors including M&E, cleaning and security are focussed upon the key goal of creating and maintaining a more sustainable asset. Best practice and new technologies form a key basis of the strategy so that the building is seen as best in class and a leader amongst the portfolio. EVORA has supporting BNP Paribas in providing advice, direction, monitoring of performance and technical input into the sustainability strategy since 2011 with clear tangible results achieved throughout the strategy.

The focus of this application is the Oceans Waste Awareness event held in 2019 which involved the General Manager of Belgrave House visiting the Philippines to host an event with the local high school which resulted in a week long cascade of events including the local media, mayor and emergency services all focussed on the importance of cleaning up plastics from the oceans. The event attracted huge attention and involvement and helped to lay the groundwork for action in helping to conserve the beautiful marine environment of the Philippines.

IN DETAIL

Waste Oceans Awareness

In terms of performance, offices often concentrate upon improvements which will provide cost savings and tangible payback. However, the management team of Belgrave House has embraced biodiversity (including beehives, planters, green walls) and have focussed upon raising awareness of wastes in the ocean in conjunction with a high school in





the Philippines. It can often be challenging to justify promoting initiatives which may seem to have limited local impact and which do not have tangible payback but this has not stopped progression in this area. William has embraced the topic of ocean and wastes awareness and has built massively on the initial premise.

The building management team understands and communicates the long-term benefits, this is not about profit, this is about protecting our planet for the use of future generations. It is easy to 'sell' sustainability when there's a pound sign to show the payback, it takes real passion and commitment to drive initiatives which may not be instantly appreciated.

Belgrave House hosts an annual 'Oceans Awareness Day' and invites tenants, members from Grosvenor, BNP Paribas and site staff to take part. The awareness day includes sharing knowledge and information, running games and activities with prizes available to promote engagement. In conjunction with the awareness day, a beach clean-up is arranged, with participation by tenants and contractors growing on an annual basis. Following the awareness day, a beach clean up event is held,

which has seen the number of participants increase on an annual basis. The management team of Belgrave House has noted that waste plastics can seem to be a remote impact seen on the news associated with other countries. Seeing the impact first-hand resonates with people, this led to the growth in the 'Oceans Awareness Day' to an international audience.

William Ball (the General Manager of Belgrave House) visited the Philippines recreationally a number of years ago and saw first hand the impact that waste in the oceans was having upon

such a beautiful geography. It was at that point that William decided something needed to change, that he wanted to help create a positive impact upon the environment and to use his passion to encourage others to actively engage and work towards a more sustainable future.

William visited the Bagacay Elementary & National High School in the Philippines (not many buildings can claim to have influence as far as the Philippines!) in July 2019 to hold a Waste & Oceans awareness event for students and local people. The agenda for this visit included students and teachers completing a beach clean-up and holding talks (including a radio show) on sustainability including technology, waste management, recycling, oceans awareness and holding games to promote and educate people on ocean health. In addition, the local government, mayor, police and coastguard were involved due to the scale of the event held.

William continuously engaged with tenants and contractors of Belgrave House in the lead up to his Philippines trip to raise awareness of the issues and the devastating impacts these have globally. This event led to a change in the syllabus of the School so that it includes environmental studies and impact

awareness of global warming. Supplies provided by Belgrave House (via fund raising and donations from Bywaters) for this event (through donations from various parties) include a generator, solar panels, LED lights, recyclable bags, litter pickers, gloves, school supplies and clothes. One of the challenges was ensuring donated supplies made it to the Philippines which involved a logistical challenge requiring a container ship which took several weeks to transport the donated materials to its final destination in the Philippines.

Sustainability Report

2019 saw the first issue of a dedicated Sustainability Report focussed upon the achievements of Belgrave House. This summarised the work completed over the eight years of the sustainability strategy implementation at Belgrave House (see attachment). The sustainability report highlighted how much a single building has accomplished in its quest to become more sustainable and try to positively impact the local environment (rather than just minimising negative impacts). The report has also acted as a springboard to further expand the sustainability strategy at the asset, the current focus is upon investigating how the building can move to net zero carbon.

Wider Impact

On a wider perspective, the approach at Belgrave House has led the way in sustainability within the BNP Paribas property portfolio. Initiatives implemented at Belgrave have often acted as a testing ground to determine success / viability for other properties which make up the portfolio. Examples of this include:

- Earth Hour – Belgrave House was the first asset within the portfolio to

support this global initiative, which now includes participants across 190 countries. This is now an annual commitment for BNP Paribas managed assets.

- Tree planting - In 2019, Belgrave House became involved in the 'Trees For Cities' campaign and sent some of the team to plant trees at Horsenden Farm to restore the farm as a unique community resource. In total over 350 trees were planted and hedgerows and pathways created
- ISO14001/ISO45001 standard promotion – Belgrave House holds both certifications, setting the gold standard for the implementation and adherence to the relevant environmental and health and safety management systems. It was the first asset in the BNP Paribas portfolio to achieve external certification to ISO45001.
- Biodiversity - introduction of roof top bee hives which have been highly successful and led to their implementation at other assets including 6 St Pancras Square Kings Cross and several other London assets.



BOTAS

ENHANCING ENERGY EFFICIENCY

AIM

The main objective of this Project is efficient usage of energy and reduction of energy consumption. By this means minimization of;

- All emissions, primarily carbon emissions,
- The negative effects on climate change by reducing carbon emissions,
- Use of natural resources,
- Energy costs, is aimed.

BOTAŞ (Petroleum Pipeline Corporation) is a state-owned enterprise with a joint-stock company status, which has operations in oil/gas sector including crude oil transportation, as well as import/export, transportation, distribution, storage, marketing, and trading of natural gas (Figure 1-2).

BOTAŞ has started to work on the establishment of TS EN ISO 50001 Energy Management System in order to use energy efficiently and to reduce

costs and environmental impacts due to energy consumption.

Energy efficiency activities started in July 2017 and “TSE EN ISO 50001 Energy Management System Certificate” was received in December 2017.

ACHIEVEMENTS

BOTAS, with its entire annual average energy consumption of about 300 thousand TOE (tons of oil equivalent), corresponds nearly 0.2% of total primary energy consumption in Turkey.

With the activities carried out within the scope of this Project; total annual energy consumption of BOTAS, which consists of natural gas, electricity and fuel oil consumption, has decreased from 373 thousand TOE to 268 thousand TOE comparing to 2017 and 2019 total yearly energy consumption of BOTAS. This corresponds by 28.1% reduction and 105 thousand TOE energy saving.

Figure 2. Natural gas and crude oil pipelines and facilities map



In this way;

562.7 thousand tons of carbon emissions have been prevented and this figure is equivalent to 80 thousand trees.

In addition;

- 114.75 million Sm³ natural gas or,
- 8,488.3 thousand tons of hard coal or,
- 105 thousand tons of oil equivalent natural energy use has been prevented.

IN DETAIL

Awareness Activities

- Banners regarding energy efficiency were hung.
- BOTAŞ personnel and subcontractors were trained on energy efficiency.
- “Energy Management and Energy Efficiency” workshop was organized (Figure 3A-3B).

Head Quarter

- Exterior insulation were made, windows and doors were replaced with aluminum materials with thermal insulation.
- 3500 fluorescent lightings in the offices were replaced with LED lightings with high energy efficiency class. Besides, lightings in the garage and basement floors were replaced with the ones with sensor.
- Solar panel system consisting of 40 panels with a capacity of 150 liters was installed on the roof.
- Old steel pipes were replaced with pre-insulated geothermal pipes. In addition, all pipes in the heat center pump station were insulated and valve jacket was applied on the valves.
- 2 chillers with efficiency class D were replaced with chillers with efficiency class A.

Figure 5. Outdoor LED lightings in Ceyhan Terminal



Regional Directorate of Petroleum Enterprise

- The electric motors at the pump stations were replaced with motors with high energy efficiency, and the maintenance and repair of the idle pumps were performed. (Figure 4).
- 2150 LED indoor and outdoor lightings were replaced (Figure 5).
- Solar panels were installed in crude oil pipeline valve stations (Figure 6).
- Chemical cleaning and pressure tests of existing solar energy panels were carried out, an automation system has been installed.
- The heating system in the Ceyhan Terminal campus were repaired, usage of split and hall type air conditioners was terminated and buildings were included in the central heating system.
- Pipes for the existing heating system were renewed at the Dörtüyl Terminal.
- CNG, which is a more environmentally friendly fuel than LPG, was switched to in the refectory and boiler room.

Natural Gas Operation and Market Operations Regional Directorate

- The major total energy consumption throughout BOTAŞ arises from the natural gas consumption of compressor stations used for natural gas transmission. With the simulations carried out in optimization studies started at the end of 2018, the pressure of the natural gas in the system has been kept at an optimum level and the compressors work less. Thus the amount of fuel consumed is minimized. By this means, a saving of approximately 34% in the amount of energy

Figure 7. Solar Power Plant with a capacity of 1MW in Tuz Gölü Operation Facility.



required for natural gas transmission was achieved in 2019 compared to 2017.

- LED lighting installation have started.
- Thermostatic valves were installed to heating radiators in the office rooms and common areas.
- The ventilation system in the local building, dining hall kitchen area was renewed.
- Main heating pipeline feeding the administrative buildings was renewed by the geothermal pipe system.
- Exterior insulation was made in local and lodging buildings.
- Automation system started for well water pumps.
- Insulated windows were used on the balconies in the restaurant building.

LNG Operation Directorate

- In the LNG Terminal affiliated to LNG Operation Directorate, liquefied natural gas (LNG) is heated, re-gasified and delivered to the natural gas transmission system.

In 2002, “Project for Utilization of Cooling Water from Waste Heat” was realized by collaborating with the 478 MW Natural Gas Power Plant (NGPP), which is neighbor to the LNG Terminal.

As a requirement of NGPP process, it uses water from the sea as cooling water. Then it discharges the heated water into the sea again. Discharge of warmed water to the sea both negatively affects the marine ecosystem by reducing the amount of dissolved oxygen and causes waste of heat energy.

In this project, the cooling water taken from the NGPP is used as heating water in the regasification process of the LNG Terminal. Thus, some of the energy required for the regasification process is supplied from the waste heat of the cooling water of NGPP.

- Old engines of compressors were replaced with high efficiency class engines.
- 230 outdoor and 700 indoor lightings were replaced with LED ones, and the projectors were replaced with LED projectors.
- Solar water heating system was installed in the maintenance and control room buildings.
- Leakage measurements were made with the maintenance work carried out and leaks were eliminated.

Silivri Operation Directorate

- A computer program, in which all parameters affecting energy consumption are recorded daily, has been developed.
- The lightings were replaced with LED lightings.

Tuz Gölü Operation Directorate

- A solar power plant with a 1 MW capacity was established in July 2019 (Figure 7). Approximately 60% of the electricity required for gas operations is provided from this power plant.

Future Projects

- Works to establish a 5MW Wind Power Plant in Silivri Operation Directorate are ongoing and the project will be operational in 2022. A total of 13.500.000,00 Kwh electricity

generation is envisaged annually. In addition to providing all the electricity required for the facility, electricity generated as surplus will be sold and additional income will be obtained. In this way, a great reduction in facility operating costs will be achieved.

- Additional solar power plants with a total capacity of 7.3 MW were planned for the Petroleum Enterprises Directorate and Tuz Gölü Operation Directorate within the scope of IPA 2018 project support (as a grant) and the projects are planned to be in operation in 2022.
- Preliminary engineering studies for the “Chimney Waste Heat Recovery Project” have been started for compressor stations used in natural gas transmission system. With this Project electricity will be generated from the waste heat of exhaust gases with high flow and a great energy potential.
- The engines used in Silivri Operation Directorate are planned to be replaced with high-efficiency IE3 class Exproof engines.
- In the Silivri Operation Directorate, Fuel System Monitoring study is planned by installing a flow meter in each turbine. Thus each gas turbines will be monitored separately. In this way, turbines with low efficiency will be detected quickly and action can be taken immediately.
- In the Pump Stations of Regional Directorate of Petroleum Enterprise, it is planned to use diesel fuel for heating rather than kalyak (a type of fuel based on petroleum) since diesel fuel is more energy efficient comparing to kalyak.
- The replacement of Fan Coils in the Head Quarter buildings has started and the works are planned to be completed by the end of 2020.

BRIAR CONSULTING ENGINEERS

SUPPORTING LEICESTER CITY COUNCIL TO DECARBONISE ITS BUILDINGS

AIM

With the announcement of Phase 1 of the £1 billion Public Sector Decarbonisation Scheme (PSDS) from The Department for Business, Energy and Industrial Strategy in October 2020, we recognised the opportunity for public sector organisations to assess the potential for energy and carbon saving within their buildings and gain funding for heat decarbonisation, building structure improvements, and related energy efficiency measures.



Briar Associates are award-winning M&E consultants with over 25 years experience in delivering strategic building services.

Local Authorities are at the forefront of leading the battle against Climate Change but, after a decade of budget pressures, councils need a reliable partner to help them quickly act on fast-track funding schemes to tackle the largest challenge of our generation – responding to a changing climate.

We recognised we were in a position to work alongside progressive Local Authorities, like Leicester City Council, to deliver carbon reduction ambitions by helping to access the government grants to support the decarbonisation of its buildings.

ACHIEVEMENTS

Briar enabled Leicester City Council to access government funding for a comprehensive schedule of decarbonisation works across a number of its public sector buildings, including 56 schools.

The new energy efficient equipment, along with the improved building fabric and thermal performance for the sites will significantly reduce heating costs.

The solar PV and heat pump installations for the sites will enable the reduction of carbon emissions and energy costs.

The contribution of grant funding from PSDS will accelerate the return on investment.

For the 56 schools alone, project works will generate a saving of 1,500 tCO₂e. The savings stated are based on the scheme's calculation criteria and emission factors:

- 51 sites having solar PV installations with an expected annual generation of 1,184,118 kWh of clean electricity, saving 87 tCO₂e.
- 39 sites having LED lighting installed, saving 1,309,895 kWh or 93 tCO₂e.
- 38 sites having glazing upgrades, replacing old single glazed units with modern double-glazed ones, saving 2,990,054 kWh and 550 tCO₂e.
- 16 sites having loft insulation fitted, saving 286,420 kWh and 53 tCO₂e.
- 24 sites having boiler plant replaced with Air Source Heat Pumps (ASHP) with net savings of 3,225,126 kWh and 709 tCO₂e.

IN DETAIL

Project background

Phase 1 of The Public Sector Decarbonisation Scheme (PSDS) made £1 billion of grant funding available for heat decarbonisation, building structure improvements, and related energy efficiency measures. The scheme is designed to enable organisations to drive down carbon emissions from industry and public buildings like schools, hospitals, and council buildings.

The scheme was divided into two parts: the Low Carbon Skills Fund; and the Public Sector Decarbonisation Scheme. The Low Carbon Skills Fund allowed organisations to apply for a fully funded survey to assess the opportunities to develop a decarbonisation strategy for a grant application. The Public Sector Decarbonisation Scheme allowed public sector organisations to apply for grant funding to improve the energy efficiency of their buildings with a commitment to heat decarbonisation, although other related energy efficiency measures could be included dependent on meeting compliance criteria.

What we did

The window to apply for the skills fund was very limited (4 December 2020), as was the window for grant applications (11 January 2021), and any work awarded funding would need to be completed by September 2021. It meant that any organisation that wanted to take advantage of the scheme needed to partner with a reliable consultancy who could act quickly to assess the opportunity and create a strong grant application.

We published articles about the new scheme on our website and social media channels and hosted a webinar to publicise the availability of the funding. We proactively communicated with eligible organisations to help them understand the opportunity and how we could help them apply for funding.

Leicester City Council is one organisation that engaged us to assess its opportunities to access funding and to support the subsequent funding application. With our help, Leicester City Council was awarded £24,253,008 of PSDS funding to upgrade 93 buildings, including 56 schools. The programme of upgrades included replacing natural gas heating with air source heat pumps, installing LED lighting, installing solar panels, and improving the insulation of the buildings.

In order to prepare the funding bid, we surveyed all 56 schools and some additional leisure centres under the Low Carbon Skills Fund in order to understand the opportunities and ensure the carbon savings met the strict application criteria (£500 per tCO₂e LT) in the grant funding bid.

Upon the successful receipt of the funding we were then commissioned by Leicester City Council to project manage and deliver the scope of mechanical and electrical (M&E) design works for the Public Sector Decarbonisation Scheme measures approved by Salix Finance.

We have since been commissioned for the Design Management and delivery of Heat Decarbonisation Plans for all those sites receiving funding that did not meet the requirements for a category one measure. The scope of work will incorporate a Roadmap to net zero.

Why we did it

We have been supporting the public sector for over 30 years and are continuing to invest in building a future that supports Local Authorities through the transition to net zero.

Local Authorities are at the forefront of leading the battle against Climate Change but, after a decade of budget pressures, councils need a reliable partner to help them quickly act on fast-track funding schemes to tackle the largest challenge of our generation – responding to a changing climate.



It is a huge responsibility and that is why we are positioned to work alongside progressive Local Authorities, like Leicester City Council, to deliver carbon reduction ambitions.

We have over 15 years' experience of liaising with existing and new clients to identify, bid for, secure funding, and design and project manage a wide range of government funded schemes. This funding has been used for heating, lighting, BMS controls and renewable technology sources and has exceeded £12M+ in value.

The project costs for Briar were covered by The Low Carbon Skills Fund.

Innovation

So that we could act quickly to meet the limited application deadline, we tailored our proven bespoke Briar Collaborative Resource Efficiency (B-CoRE) Energy Management Tool in order to accurately make the calculations required to meet the

application criteria. The powerful system has been developed by Briar over a number of years to provide powerful analytical and business case modelling to clearly demonstrate the potential for savings. It also allows the user to output data into a wide range of reports to assist them in managing energy and carbon reduction effectively.

Benefits

We are working closely with Leicester City Council and the wider Design Team to deliver the scope of support agreed, while adding value through the provision of independent expert advice on all aspects of the technical design and energy efficiency.

This will ensure the new building services represent value for money, are inherently low carbon in design, therefore also offering the following benefits:

- User friendliness, controllability and excellent comfort conditions.
- Reliability and continuity of building/services operation.
- Significantly reduced long-term energy consumption and carbon emissions.
- Reduced maintenance

Leicester City Council will benefit from reduced long-term energy and maintenance costs, while users of the buildings will enjoy improved thermal insulation; better lighting and a more pleasing environment and aesthetics.

Quantifiable carbon savings (CO₂ savings are based on the scheme's calculation criteria and emission factors.)

- 51 sites having solar PV installations with an expected annual generation of 1,184,118 kWh of clean electricity, saving 87 tCO₂e.
- 39 sites having LED lighting installed, saving 1,309,895 kWh or 93 tCO₂e.
- 38 sites having glazing upgrades, replacing old single glazed units with modern double-glazed ones, saving 2,990,054 kWh and 550 tCO₂e.
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- 24 sites having boiler plant replaced with Air Source Heat Pumps (ASHP) with net savings of 3,225,126 kWh and 709 tCO₂e.

Building for the future

We used our experience of supporting Leicester City Council and other clients in Phase 1 of the PSDS scheme to build on our support for anticipated future rounds of funding. As a result, we secured grant funding for several clients in Phase 2 of the PSDS scheme, totalling £1.03 million of approved grants.

CARDINAL

VIRTUAL REALITY INTEGRATION

AIM

As the business has a manufacturing arm it completes a large amount of prototyping works for programmes & projects that are then changed with a further prototype being made or not used at all within the roll-out. These items are normally then disposed of without being utilised. The business decided that it wanted to reduce the waste it was producing as a side effect of creating these prototypes. By the introduction and implementation of Virtual Reality (VR) Cardinal knew that it could make the changes to the prototypes in the software itself rather than wasting materials and producing waste that would then need to be disposed of.

The overall aim of the project was to obtain client buy in to the technology so that they saw it as a viable tool to use rather than a gimmick. By ensuring everything was dimensionally accurate we were able to portray the delivered project in an extremely detailed way that allowed the user to be fully immersed. Through this method we felt that more clients would then adopt this stage of the design process therefore reducing waste but also speeding up the process

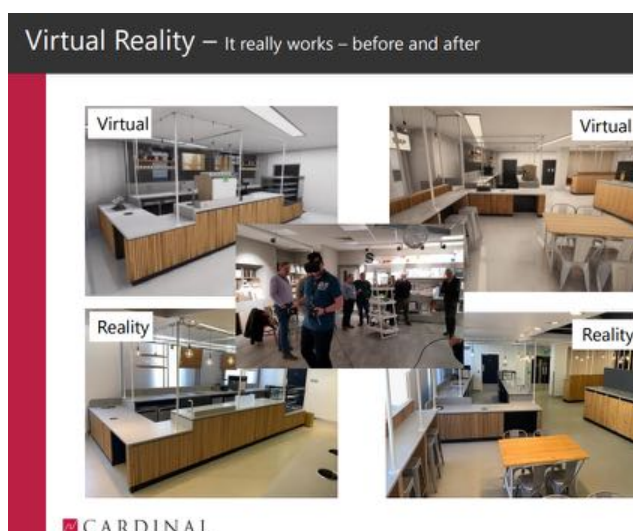
ACHIEVEMENTS

The integration of VR worked extremely well and has achieved adoption by several of our PLC clients as part of their design process when engaging with Cardinal, it is no longer looked at as a gimmick.

This stage in the process has allowed clients to make many different changes to the design without it creating any waste as well as saving them significant time and money in delivering the project / programme.

The visualisation process has also assisted several clients in gaining their board approval in a more-timely manner so that the project could be signed off and instructed quicker. This has been a game changing situation on a number of occasions whereby the project / programme has been able to be delivered a number of weeks or months quicker than would it would have been if it had followed the traditional method.

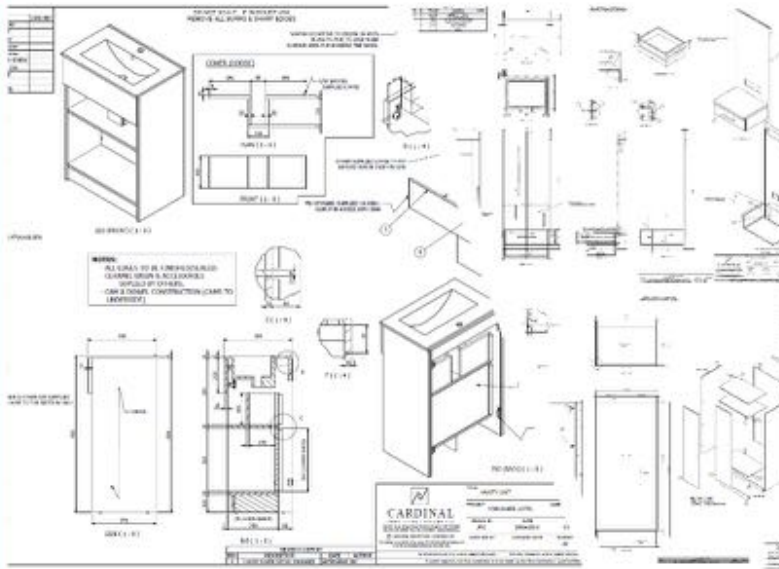
As the visualisations can be sent & viewed remotely we have also been able to have meetings to sign off designs over video & telephone conferencing rather than in face to face meetings which is also assisting in the reduction of our carbon footprint as a business.



IN DETAIL

The project involved purchasing VR equipment and gaining the 'buy in' of the client to allow us to use it on their project. Virtual Reality software has been in use within the construction industry for some time but Cardinal chose to embrace this amazing medium of allowed clients to accurately visualise & 'feel' a specific space before it is created.

Create – Manufacturing specifications



Cardinal invested in this new initiative as we see a large amount of waste being created through prototyping products. We thought that this was a tangible solution to reducing that waste.

The costs were in excess of £30k which was funded through CapEx by the business.

Cardinal decided to complete the Virtual Reality process on a new concept design that was brought to them by Primark. The retail giant had a strategy to install coffee shops into it's existing stores, had a basic concept design and wanted a prototype making. Cardinal invested the time & effort, at it's own expense, to undertake the creation of a virtual reality coffee shop based upon the design. By taking a chance and using this process for a major PLC client, that confirmed they wouldn't pay for it, Cardinal were able to save the client time, money and most importantly reduce their impact on the planet.

Following the mocking up of the VR model the client was invited back to assess and approve it. They were blown away with the speed in which it had been constructed, the dimensional accuracy of detail

and the fact that they were able to assess several 'issues' in a virtual world rather than looking at an expensive flawed prototype.

Following discussions some major changes were able to be made quickly and concisely to enable rapid signoff of the project. Cardinal were able to take the VR equipment to a regional office for sign off at that level before creating a 'walk through' that was sent to the head office to be assessed without the use of any specialist VR equipment.

Through the implementation of exact detailing Cardinal were able to create a dimensionally accurate virtual model of a project that the client team were able to immerse themselves in to achieve design approval and sign off.

This use of technology stands out because it has been used as an end to end service for the client, allowing them to accurately visualise an area as a finished project before any works are physically started. By ensuring all models are dimensional accuracy Cardinal were able to effectively and efficiently space plan the full area for the client maximising seating, confirming appliance installations can be achieved whilst explicitly quantifying numbers of people for Fire regulations & Building Control.

A pragmatic approach through a transparent & innovative use of technology came together to deliver a world first for a retail giant.

This astounding use of technology was able to save the client time, money and (most importantly) the creation of a series of prototypes that would normally have been disposed of / wasted. The process saved the client >£35k in prototyping the one project, enabled the design to be agreed 5

weeks quicker than normal and shaved a number of months off the delivery programme. The fact that the project also generated zero waste was a massive environmental win as well!

The innovative approach and use of technology that Cardinal insisted on taking, even though the client refused to pay for it, returned dividends by the client placing a number of subsequent orders and actually asking to pay for the VR design process. Cardinal used this process to also create and deliver the 'Central Perk - Friends Cafe' (only official one in the world) at Primark in Manchester and is using the system on a number of upcoming projects for the same client.

SERVICE POINTS



Cardinal has embraced the use of VR at the planning & design stage of it's projects to deliver quantifiable savings of cost, time and waste production for ourselves and our clients.

This has also reduced onsite mistakes, increased speed to site and allowed for more detailed planning by all stakeholders on a project. One client was so impressed by the work completed that at handover of the works they stated that they "had already seen the project".

Cardinal has continued to use VR for other clients including to visualise a new design for the retail superstore Harvey Nicholls, to deliver new concepts for Cineworld and the refurbish a number of hotels

including an 81 bedroom facility in Harrogate. Cardinal has been able to design everything from office space, to restaurants, to high end healthcare clinics as well as other projects in between.

The longer term benefits of this initiative are being gained by the various client's as they are not paying for items to be prototyped that can not then be used on the projects but the major benefit for Cardinal is that we are reducing our waste creation through clever visualisation techniques.

There is a massive benefit to other construction companies, manufacturers, designers, contractors, clients, etc. of taking these techniques on board and utilising them. The rewards are less design changes, less mistakes onsite, less waste, reduction in carbon footprints, etc. the list goes on.

Cardinal now try to use some form of visualisation (VR, 3D rendering, etc.) in all of it's projects to not only reduce the waste created onsite but to help the client understand what it is that they will be having delivered. It is also a great help

to the operatives onsite who are also able to easily visualise what is expected to be delivered.

Cardinal is an innovative, forward thinking company that prides itself on designing & manufacturing quality products. Efficaciously providing a flexible service that delivers on time, on budget whilst exceeding expectations.

Cardinal's use of VR has been shortlisted as a finalist for a National Building & Construction Award in the Innovation of the Year Award and Digital Construction Award categories.



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CARNELL

STONEMASTER INSITU RECYCLING OF ROADSIDE FILTER DRAINS

AIM

The problem

Effectiveness of roadside filter drain gradually reduces over time as silt and fines from surface water runoff fills the voids between the aggregate. Over time, this leads to the build-up of an impermeable barrier in the filter drain, resulting in significantly reduced effectiveness. This leads to increased risk of standing water and flooding on the carriageway and consequential increased accident risk for road users. Ignoring the problem can also lead to deterioration of the carriageway sub-base layers, reducing overall pavement life span, requiring increased maintenance interventions.

What we did

The aim of our project was to develop an innovative process (method and machine) to return the filter stone material to its optimum performance condition by recycling the aggregate on site in the same shift. To deliver on that aim, we invested and developed our specially designed STONEmaster machine. This specialist recycling process ensures that only silt, fines and aggregate not confirming to the Type B specification are removed from the excavated material, with the majority of the aggregate recovered, cleaned and replaced back into the roadside filter drain in optimum condition.

Project benefits

The STONEmaster delivers multiple benefits including environmental, economic, social and road-user satisfaction metrics.

ACHIEVEMENTS

How we know it works

In the last five years (2015-2019) we have used STONEmaster to recycle on site 265,477m³ of roadside filter drain material for Highways England on the strategic road network. This represents around 488km of roadside filter drain recycled, which although sounding a lot, only represents 8.2% of the overall filter drain length on the strategic road network.

Achievements in numbers

STONEmaster delivers strong performance against the UN's Sustainable Development Goals, contributing directly to delivery of eight of the goals. These are coalesced around the following key



STONEmaster



STONEmaster filter drain recycling makes a significant contribution to the United Nations Sustainable Development Goals, encouraging economic growth while protecting the environment and maintaining the strategic road network in a safe and serviceable condition.

Here we explore how **STONEmaster** delivers sustainable development goals.

achievements of STONEmaster on the strategic road network during the last five years:

- Social/environment: 79% reduction in lorry movements to and from site, estimated to have saved 53,095 individual lorry movements, 1.4 million transport miles, and 313,794 litres of diesel fuel.
- Environment: 7.1 tonnes less CO2 emissions per km, estimated to have saved 2,655 tonnes of CO2.
- Environment: 265,477m³ less quarried, processed, and imported new material.
- Economic: £1.39m saved in landfill tax (inert material), £25.1m cost savings over traditional dig out and replace process.
- Roadworker safety: people-plant interface (one of the top KSI risks in the industry) reduced by a factor of 4.75.

drains that minimises environmental impact. The production process returns filter drain material to its optimum performance condition, improving road safety and pavement integrity by reducing flooding on the carriageway.

Commitment

Carnell are actively committed to minimising the impact of our operations, and to protecting flora, fauna and wildlife. Our management system is fully certified to ISO14001 'Environmental Management System'. We invest in developing technologies and solutions that cut down waste, carbon emissions and whole life costs. STONEmaster is a great example of this commitment.

Carnell identified an opportunity to innovate and bring a new product to market which addressed a clear network need. Investment was made in designing and developing the STONEmaster machine, with trials funded by Highways England through capital schemes. Over the years staff have engaged, with incremental small step improvements of the machine, funded by Carnell.

IN DETAIL

Introduction

STONEmaster is a sustainable in-situ method for removing the sediment within roadside filter

Innovative process

The STONEmaster production process has 5 key stages.

1. Excavate the existing clogged filter material and load into the STONEmaster.
2. STONEmaster uses a dry insitu method to clean the stone and separate non-compliant material, all within a single lane closure.
3. Cleaned Type B compliant material is returned to the filter drain via a chute on the rear of the STONEmaster.
4. Non-compliant material is removed from site via a conveyor on the front of the STONEmaster.
5. When required new material, typically 10%, is used to top up the drain.

A recent example of continual improvement was re-configuring the dry wash drum to free rotate to improve operating performance on steeper inclines.

Environmental benefit

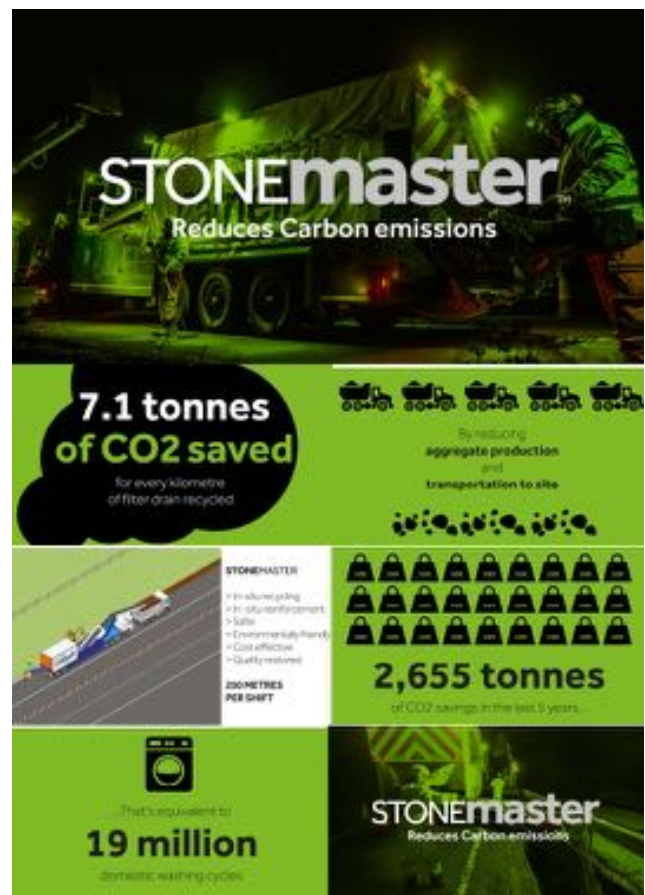
STONEmaster hits all the right notes in minimising environmental impact of maintaining the strategic road network. In the last 5 years STONEmaster has recycled 265,477m³ of roadside filter drain on the SRN. That's the same volume as 106 Olympic sized swimming pools.

Using Mineral Product Association figures on carbon management, savings in aggregate production and transportation are estimated to produce 7.1 tonnes saving in CO₂ emissions for every km of filter drain recycled. So, in the last 5 years we have saved an estimated 2,655 tonnes of CO₂ by using STONEmaster. This is the equivalent of saving the annual electricity consumption of 2,963 people in the UK or saving 19 million domestic washing cycles.

Social/environmental benefit

Two key benefits offer protection and enhancement to the quality of life for surrounding communities.

- Reduced traffic emissions – STONEmaster recycles the filter material on site in the same shift. This results in a 79% reduction in lorry journeys to and from construction sites. In the last 5 years that is estimated to have removed 1.4 million transport miles from our roads. That is the same distance as travelling round the Earth's equator over 56 times. This has saved an estimated 313,794 litres of diesel fuel.
- Air quality improvements – in the last 5 years we have removed 53,095 lorry movements from the roads by using STONEmaster. Stacked end to end that line of lorries would stretch 395 miles, a similar distance as travelling between London and Edinburgh in the car. Removing these vehicles travelling



to and from site and unloading on site, has improved the air quality for communities adjacent to the network and roadworkers on site, contributing to improved health.

Economic benefit

The STONEmaster recycling process delivers cost savings by reducing the volume of new material required and haulage costs. When compared to a traditional excavate and replace solution, STONEmaster has generated £25.1m cost savings in the last 5 years.

Sustainable Development Goals

The STONEmaster process makes a strong contribution to the Sustainable Development Goals (SDGs) adopted by all United Nation members in 2015. STONEmaster delivers against eight of the SDG high level goals, and 14 of the targets/indicators that sit under these goals.

For example, Goal 12 is to 'Ensure sustainable consumption and production patterns' with target 12.2 requiring 'By 2030, achieve the sustainable management and efficient use of natural resources' and target 12.5 requiring 'By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.' In the last five years, the use of STONEmaster, has saved the transportation and disposal of 265,477m³ of existing material to tip as waste. By recycling the existing material in-situ, this in parallel saves the aggregate production and import of 265,477m³ of new material to site. This makes a significant impact on protecting the environment and achieving efficient sustainable use of natural resources.

Long-term benefits

STONEmaster provides three key long-term benefits.

- Reduced flooding risk – STONEmaster recycling re-establishes the effectiveness of roadside filter drains 2-3 times faster than

conventional dig out and replace methods. This delivers a greater treated length for every £ spent.

- Asset management – by maintaining the effectiveness and efficiency of the filter drain, STONEmaster pro-longs the pavement life by ensuring water is prevented from weakening the lower pavement layers. This creates a long-term sustainable asset.
- People-plant interface – STONEmaster reduces the need to import new material or return cleaned material which has been recycled off site. This significantly reduces the frequency of people-plant interfaces by reducing lorry movements on site by a factor of 4.75.

Future development

Having developed the original method and machine, the Carnell Board invested in a further five STONEmaster machines, and two other companies have adopted similar methods. The insitu recycling method is now accepted by Highways England and included as an option in their Drainage Specification allowing others to replicate.

With only 8.2% of filter drain treated in the last five years, Carnell are working with Highways England asset teams to identify future programmes based on deterioration modelling using our new SMARTscan technique which makes use of video, mapping and GPR technology.

Summary

TONEmaster has been in operation for a number of years, providing added confidence around long-term environmental and sustainability benefits. It's contribution to eight of the Sustainable Development Goals provides evidence that the on-site recycling and reuse of aggregate by STONEmaster, is a process that needs to form a fundamental pillar of future roads asset management strategies.

CASACERTA ARCHITECTURE DESIGN & BUILDING

AMAZONIAN TIMBER STRUCTURES AT CIPEM'S STAND

AIM

It encourages the productivity and conscious consumption of wood and its forest based products regarding the current legislation and in a sustainable basis. CIPEM covers 100% of the native wood producing municipalities of Mato Grosso state and works to demystify the image of the forest sector as a villain of deforestation.

Aiming to demonstrate the several possibilities of building with Amazonian wood, an exhibition stand for national and international fairs was conceived and built, highlighting the use of lesser known species.

The design and execution of the stand had as premises the fast assembling of the structures based on its constructive rationalization, the maximum exposure of the variability of the Amazonian species managed by Cipem and the search for an architectural language and contemporary design.

ACHIEVEMENTS

Our context of deforestation in the amazon region is a direct consequence of the promotion of economic activities with no value added to the rainforest Wood production from forest management is one of the main activities that will help to change this reality, and the building sector has a major role on it.

The experience of designing and constructing the CIPEM's stand with Amazonian woods confirms the several possibilities of building with this raw material. The reduction in the assembling time that is typical of the prefabricated structures is added to the aesthetics given by the presence of wood, making it very competitive against other building materials.

The use of timber structures is an evidence of the flexibility of this sustainable and locally sourced material. It should be pointed out the importance of demystifying the use of timber structures as "non-ecological" in our country, because wood is the

only choice for a renewable and sustainable building material and wood materials are desirable for their strength, durability, beauty and cost-effective construction.

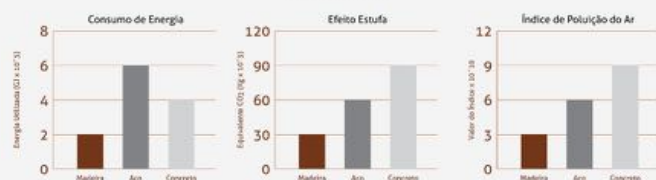
IN DETAIL

Brazil has an undesirable historic of deforestation of Amazon Region due to strategic policies that favors economic activities which prescind of rain forest, as agriculture, cattling and mineral exploitation.

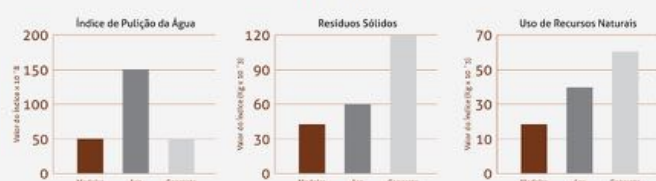


Wood is the most researched material in countries where its use in construction is intensive, such as Canada and the USA. Research in these countries confirms that using wood means consuming less energy in processing, consuming fewer natural resources, polluting less and producing less waste, emitting less greenhouse gases and being able to have its supply in a renewable and, therefore, infinite way.

Construction



Extraction



As a result deforestation rates are growing and paradoxally forest based products are rejected as non ecological. In this context CIPEM, which is the entity that represents the forestry sector in the state of Mato Grosso, promotes the productivity and conscious consumption of wood and forest based products in a sustainable way, in accordance with current legislation and in harmony with the environment.

The organization represents the eight forest-based employers' unions and covers 100% of the native wood producing municipalities of Mato Grosso State, being on vanguard of sustainable forest management in Brazil. It's a hard work to demystify the image of the forest sector as a villain of deforestation, although it's very simple to understand that producing wood with forest management techniques means that you must keep the forest if you want to keep your business.

Within this philosophy and with the aim of promoting the use of Amazonian wood in the construction sector, the design of a stand was developed with structural solutions that highlight the material. It will be exposed in national and international fairs such as Carrefour du Bois in France.

The idea is: the more you get used to amazonian forest based products more you understand that the

consumption of these products helps to preserve the rainforest. Of course, you 'll be more and more familiarized with sustainable forest management concepts. It's a great step into understanding what really means sustainability because in Brazil people see amazonian wood as a result of deforestation but they don't mind about the consumption of meat coming from this region.

The stand construction had financial support by CIPEM and wood came from different

exploitation regions and this diversity represents the eight forest-based employers' unions that are organized by CIPEM. Also lesser-known species were used in the stand, highlighting all the diversity of amazon region and promoting new possibilities in the market for these forest based products.

Each wood piece used in the stand was properly identified by management control protocols, showing the necessity of attending legal requirements by producers and consumers. The design and execution of the stand had as premises the fast assembling of the structures based on its constructive rationalization, the maximum exposure of the variability of the Amazonian species and the search for an architectural language and contemporary design.

As a result of these amazing timber structure made of amazonian woods, the designing of bus stops is under development in order to be assembled in the city of Cuiabá. The main focus of this initiative is the building sector which responds for almost 40% of the carbon emission in the atmosphere, and wood is a long term carbon deposit. Wood is pointed out as the building material of this century and our hope is that wood can be the answer to maintain our giant rainforest in Brazil.

CAWARDEN SUMMIT COLLIERY

AIM

Following the successful application for planning permission for the former Summit Colliery site, located at Welshcroft Close, Kirkby-In-Ashfield in Nottinghamshire, Bolsover Properties instructed specialist contractor, Cawarden, to reclaim the site suitable for commercial/industrial use.

The site had been left untouched for many years and in that time the botanical and invertebrate interest had developed sufficiently to be designated as a Local Wildlife Site. The designation created a problem because the site was previously allocated by the local authority as employment land.

Following cessation of coal mining and demolition of the former Summit Colliery, the site was returned to Bolsover Properties who wanted to re-develop it to provide employment in the local area. Surveys in support of a planning application confirmed the botanical interest of Common Spotted-Orchid and Bee Orchid.

Invertebrates surveys revealed the presence of a range of butterfly species including a small population of Dingy Skipper, which is uncommon in Nottinghamshire.

Consultees including Nottinghamshire Wildlife Trust (NWT) objected to the development because of the site's designation and the potential impact

on biodiversity. The project aimed to provide a long-term sustainable solution that would protect botanical diversity, maintain the conservation status of Dingy Skipper and enable re-development.

ACHIEVEMENTS

The solution was based on the premise that not all of the site was of botanical and/or invertebrate interest and alternative land with low ecological value was available in the local area to modify and create bespoke habitat for butterflies and plants.

Detailed method statements were prepared and the consultees were satisfied that the solution was sustainable and compliant with local and national planning policies for biodiversity. The care and attention to detail have proved worthwhile.

Today, in 2021, the translocated grasslands and hydro-seeded grasslands are thriving. Monitoring of the Dingy Skipper populations provided encouraging results from the outset and the 2016 monitoring indicated a minimum population size increase of 350% in the created habitats when compared to the baseline in the original habitats.

Monitoring in 2018 of adult butterflies only, indicated that the increase in population size has been sustained. The project has succeeded beyond expectations and has provided the population with a long-term future in the area. numbers are such that expansion into new habitats beyond the existing range will likely occur in the future.

The expertise provided by Butterfly Conservation and the willingness of the client, supported by Cawarden and the



ecologist, enabled a sustainable long-term solution to be developed.

The scheme received a commended award by The Chartered Institute of Ecology and Environmental Management (CIEEM).

IN DETAIL

The land was once home to the former Summit Colliery and when it was demolished in the mid-1960s the buildings were simply knocked to the floor and left where they fell. There were no requirements to recycle materials in the 60s and the demolition was more than likely undertaken by the colliery workers.

Our work at the site was undertaken in phases - over several years. While the land reclamation was a major concern for the client, the conservation requirements involved some very interesting work alongside our more unusual site remediation work.

The site, since its demolition, has gradually been built around and this last portion is the final piece of the jigsaw. Bounded by industrial units, housing and a railway line the site will eventually be developed for industrial use.

Cawarden's contract called for the removal of demolition arisings from the former colliery buildings and the remediation and consolidation of the land in readiness for development. The site is home to some uncommon plants including Common Spotted Orchids *Dactylorhiza fuchsii*, Bee Orchids *Ophrys apifera* and Dingy Skipper *Erynnis tages* butterflies, which is scarce in Nottinghamshire.

We were therefore required to relocate the rare species from their current locations on the

site to the periphery of the development. The site is currently at the Northern edge of the Dingy Skipper's territory in the UK and therefore represents an important site and one that ultimately needs to be conserved.

Unlike a more traditional restoration scheme where the land is put back as good as possible to encourage vegetation to grow, the Summit Colliery site has had areas specifically designed for the relocation of both species. Orchids and butterflies require open ground and low nutrient habitats, which are unfavourable for many plants and insects to flourish so a poorer ground than is usually requested on remediation works was required.

Innovative use of mitigation/enhancement techniques The project ecologists had the necessary expertise to supervise the creation of a suitable substrate to receive translocated turf. This would support new species-rich grasslands within the Summit Colliery site and on a nearby former colliery spoil tip, which had been part-cleared of immature plantation woodland (a mix of Swedish Whitebeam, Scots Pine and Grey Alder).

The trees were felled and the brash was chipped for off-site use. The grasslands were created using translocated materials including orchid-rich turf with the remaining areas being hydro-seeded (onto colliery shales) with a grassland seed-mix containing the larval and adult food plants for the



butterfly species recorded on the site. The turf had to be excavated bucket by bucket because of the substrate, which was an unconsolidated mix of brick rubble, fly-ash and rudimentary soils.

Each bucket load being gently lifted and relocated on and off the site under the supervision of an ecologist. The translocation of Dingy Skipper larvae and the creation of specific habitat was carried out with technical support from Mike Slater (Chairman of the Warwickshire Branch of Butterfly Conservation). Mike was approached, because of his expertise with habitat creation for Dingy Skipper, specifically the creation of butterfly banks.

Mike surveyed the site, identified locations containing the larvae, supervised the creation of the butterfly banks using rubble from Summit Colliery and the translocation of the turf containing the larvae. The turfs were carefully positioned into the butterfly banks and the banks were modified at the micro-scale to provide the exacting conditions required by dingy skipper eggs and larvae.

Biodiversity gain

A Section 106 Agreement required monitoring of orchid and Dingy Skipper populations, one, three and five years after the translocation work. The number of botanical species including orchids has not changed to any significant extent, with losses being replaced by sown species and the orchid populations have been maintained at sustainable levels. The major biodiversity gain has been the increase in the size of the Dingy Skipper population.

The translocated population was small and not more than ten adults. Monitoring of the Dingy Skipper populations provided encouraging results from the outset and the results of the 2016 monitoring indicated a minimum population size increase of 350% in the created habitats when compared to the baseline in the original habitats.

The final monitoring in 2018 of adult butterflies only, indicated that the increase in the size of the adult

population has been sustained. The local branch of the Butterfly Conservation Trust has been notified and will be allowed to continue to monitor the populations into the future.

As the sites reach carrying capacity it is anticipated that individuals will migrate to interact with the small satellite populations that are located in the local area, thus creating a sustainable meta-population. The project embodies and advances the principles of sustainable development

The long-term future of the botanical and invertebrate interest of the site has been secured through appropriate mitigation. The site was partly contaminated and in the long-term would have required remediation works to remove the contamination.

The habitat creation and translocation were included within the remediation works and we were supervised by ecologists. The work was underpinned by a Section 106 Agreement - securing the long-term future and funding to manage the plants and butterflies.

The land allocated for employment has been partly occupied by a large waste recycling plant, which has provided much-needed employment in the local area. The remaining land is currently To Let.

Cawarden has subsequently remediated other sites with ecological interest. Project demonstrates value for money in terms of impact. The costs of the ecological parts of the project (£90,000) were incorporated into the overall reclamation and remediation costs for the scheme, which were significantly more expensive and this work would have been carried out to remove contamination, regardless of the ecological receptors.

The new off-site grassland and butterfly banks are accessible to the local population and are a significant improvement on the previous plantations that were of low botanical diversity and rarely used.

CAWLEYS

LOCAL RECYCLING, GLOBAL RESPONSIBILITY

AIM

Cawleys intention was to divert waste from landfill through sustainable recycling and resource management.



Our aim was to invest heavily in waste and resource recovery technology by building a Materials Recovery Facility (MRF) that would be the only one of its kind in the South East of England.

We would also need to invest in people, creating jobs in the local community. The (MRF) would enable segregation of general waste and recover recyclables. we planned to boost recycling above and beyond our clients' on-site efforts. Our vision would help clients maximise recycling.

This would reduce costs of disposal and create a revenue for commodities. Materials not suitable for recycling would be diverted from landfill via refuse derived fuel (RDF).

RDF plants incinerate waste and extract the latent energy providing sustainable forms of fuel. Cawleys also collect coffee cups and coffee grinds as single waste products as part of our service range.

The coffee is reprocessed and used for fuel and cups are turned into reusable products such as reusable coffee cups. More recently Cawleys have incorporated a composting solution for Vegware. We now collect Vegware as a separate waste stream and divert from general waste by sending for composting.

ACHIEVEMENTS

Cawleys built a state-of-the-art (MRF) Materials Recovery Facility.

We have invested over £4.2m to deliver a facility that enables us to divert waste from landfill.

Our MRF is the only one of its kind in our operating region. We also process the waste from our Wellingborough and Milton Keynes sites.

Since completion in 2009, we have diverted over 252,000 tonnes of recycling from General Waste.

We currently employ 32 staff in the MRF facility alone, creating employment within the local community. Clients now achieve their own individual environmental targets by reporting the generic recycling rates achieved at the (MRF). This encourages clients to choose Cawleys for their waste services and benefits those who are serious about their environmental responsibilities.



The processes implemented within the MRF enhance the recovery of commodities that create a revenue whilst reducing costs of disposal as the waste decreases.

Materials not suitable for recycling are diverted from landfill via refuse derived fuel (RDF). We now have a solution for single-use cups and ensure they are recycled effectively and collect coffee grounds for recycling into coffee logs for fuel. We are also able to divert coffee cups and Vegware to their alternative destinations through the same processes.

IN DETAIL

Environmental benefit

Cawleys are a third-generation family run business with over 70 years' experience. As an organisation that truly cares about our clients and our community, it was our priority to deliver sustainable solutions that will benefit businesses and the planet, now, and for generations to come.

Our main focus was to divert all waste streams from Landfill using innovative waste segregation solutions such as a Materials Recycling Facility. Since 2009 Cawleys have extracted 252,000 tonnes of recycling from our General Waste tonnage.

From April 2020 to March 2021 we were successful in diverting the following quantities of waste to

recycling:

In April 20, 31.00% of 3250 tonnes of waste was recycled
In May 20, 30.98% of 3005 tonnes of waste was recycled
In June 20, 27.40% of 3300 tonnes of waste was recycled
In July 20, 23.80% of 3515 tonnes of waste was recycled
In Aug 20, 26.20% of 3146 tonnes of waste was recycled
In Sep 20, 23.80% of 3621 tonnes of waste was recycled

In Oct 20, 26.30% of 4067 tonnes of waste was recycled
In Nov 20, 33.40% of 3762 tonnes of waste was recycled
In Dec 20, 39.55% of 3742 tonnes of waste was recycled
In January 21, 34.30% of 2859 tonnes of waste was recycled
In Feb 21, 34.00% of 2832 tonnes of waste was recycled
In March 21, 35.20% of 3426 tonnes of waste was recycled

We have also Invested in people making sure we had the right management team and employees in place to manage the project effectively. Cawleys have also more recently teamed up with the Forest of Marston Vale to launch a new tree planting initiative.

We have long been a sustainability focused business and are committed to doing all we can to help the environment and give back to the local community. Cawleys scheme will plant trees at the Forest of Marston Vale which is working towards 30% tree cover, the equivalent of planting another 5 million trees.

We had embarked on a similar project back in 2007, and are delighted to have reinvigorated this partnership.

Cawleys have worked very hard to achieve the following accreditations:

ISO / 18001/9001/14001
Safe Contractor Approved
CIWM
DVSA
Earned Recognition RHA British Safety Council
(Member) Bronze
The Right Fit CHAZ Accredited Contractor

Innovation

The MRF Facility operates where waste is placed into the hopper which leads to conveyor belt then the trommel. The trommel has holes of decreasing size to filter out large from small content – separating the waste onto different conveyor belts.

Smaller fragments then divert to our TiTech polysort which automatically sorts by weight, while identifying materials such as paper and plastics where air pressure is used to divert to a separate belt. The heavier fragments continue through the process.

Magnet extraction is used to collect metal content this is segregated into a separate container.

The remaining waste continues to two separate manual picking cabins where two teams of pickers extracting any recyclate and place into relevant chutes either side of the picker's stations. The chutes lead to single stream commodity bays.

When full the bays spring open automatically, and the commodity is fed on a conveyor to a fully automatic baler. This produces valuable commodities such as card and plastic from what would have been general waste.

Investments have been made to ensure that our employees are working in a safe and comfortable environment. Our picking line is situated in its own segregated air-conditioned unit to ensure that employees are protected from dust and heat.

We hold the Investors In People silver accreditation as our employees are the backbone of our business and we take every opportunity to encourage, develop and reward where possible.

Social benefit

The social benefits the facility brought to the community were multiple as the site created employment in the local area and allowed local businesses large or small to be more environmentally effective. Cawleys were then in a position financially to continually support local charities.

One of the most rewarding achievements is that we are working with NOAH Enterprises, this is a charity that supports homeless people in Luton.

We are supporting NOHA by offering employment opportunities to people from the homeless community. Our experience of working with people from disadvantaged groups has taught us that meaningful employment will not only allow people to become independent but more importantly flourish and thrive.

Economic benefit

The financial benefit of the project for Cawleys has meant that where we would have paid £100 per tonne for disposal on average over the past 12 years, we have not only not had this cost but we have obtained a rudimentary £25 per tonne average rebate value of what we segregate from the general waste tonnage.

252,000 tonnes @ £125.00 = total economic benefit of £31,500,000

Impact

The project has not only had a positive impact on Cawleys from an environmental perspective (reducing disposal by increasing recycling and commodities) while implementing cost savings



(Recovery of commodities as opposed to paying for disposal) it has also been highly effective in changing opinions on how waste can be managed.

Our clients can feel confident that they are meeting their own environmental responsibility just by using Cawleys for their waste services.

Future further developments

Cawleys continue to improve the facility and to date have invested over £4.2m to ensure the site remains state of the art and continues to enhance all recycling opportunities.

We also plan to create another MRF at our Wellingborough site. This will reduce our carbon footprint by minimising vehicle movements between the sites and by doing so will reduce the cost of transport.

Possible adoption by others

Cawleys have invited other waste companies within our area to tip at our facility this enhances the level of recycling even further as we capture more waste therefor creating more recycling from other platforms.

Cawleys have also have strong relations with waste brokers who rely on us to deliver the service that their clients expect.

CBRE-SAVILLS WATERLESS URINALS INSTALL

AIM

The aim of this project was to remove the base build urinals which were flushed using potable water to water less urinals, this would save water.



Why did you do it?

CBRE continually work together with the client, we to reduce the consumption of utilities, including water. By continuous improvement and innovation in the way that CBRE interact with the building services, at Cannon Street, we identify opportunities to reduce costs and consumption and environmental impact in everything we do. Water is often the poor relation to Gas and Electricity, but still attracts a large carbon footprint and significant costs.

If quantifiable, what did the project achieve in terms of sustainable development, economy and environment and/or equity?

ACHIEVEMENTS

Since the urinals were installed in October 2018 the water savings from the previous year to April 2019 have totalled 4,497,000 litres of potable water.

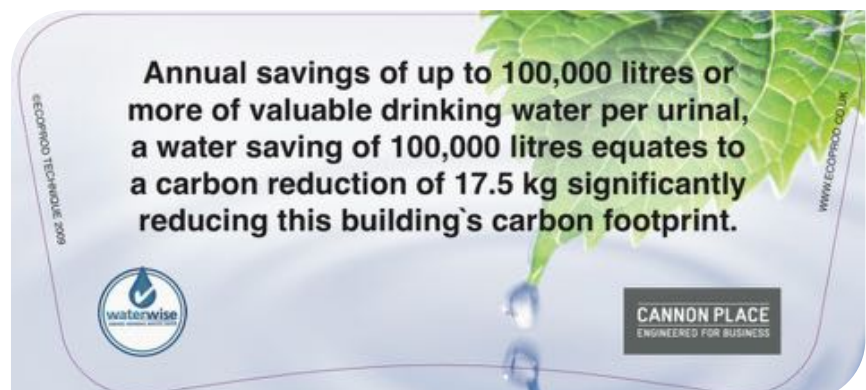
The project achieved savings of 4,497,000 litres of potable water, over a period of 7 months. This is a savings of approximately £122,000.00.

An important area of emissions reduction is associated with reducing the amount of highly

IN DETAIL

What did the project involve doing?

The CBRE FM team on behalf of Savills installed 99 x Ecoprod waterless urinals to the gentlemen's toilets and in all of the washrooms at Cannon place.



treated water that is required to be put into supply. At Cannon Street we have reduced these Scope 3 emissions associated with the water consumption by 2.9 tonnes CO2

There are also benefits in achieved in reducing water stress, that is becoming more of an issue in the SE and London.

Who and What Benefited?

The main tangible benefits are the reduction in cost for the supply and treatment of the water. Further benefits are realised from reduced maintenance (newer systems) and more reliable washroom services.

Longer term Benefits

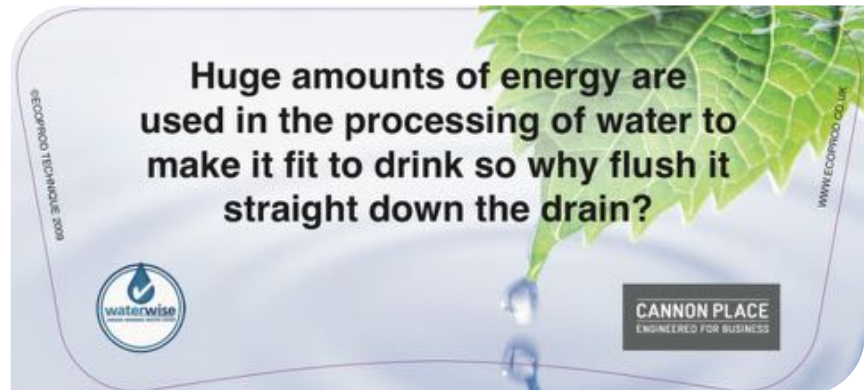
The longer term benefits include, occupier engagement as we have been asked if they can do this at home.

The reduction in consumption and associated CO2 emissions will have a wider impact on climate change and global warming.

Was there anything innovative about the project?

This is the first use of this technology on the client site. They were initially sceptical but, CBRE working with our supply partners, provided a free trial installation and the resulting savings convinced the client to rollout the Ecoprod waterless urinals to all parts of the building.

The collaboration between all involved parties to make this project happen, ie client, CBRE, cleaners etc was the first time all parties had engaged in this sort of venture.



Can any other organisations/communities benefit from implementing your methods?

Yes. The methodology, benefits and lesson learned are being developed into an Innovation Case Study for dissemination to all CBRE contracts and clients. There is no reason that these savings cannot be replicated across the large portfolio of buildings that CBRE manage.

What did you learn from the project and are you planning any further development?

The success of this project was the understanding that different stake holder have different objective and priorities and they all needed to be considered each stage, both before, during and after the implementation. This methodology will be used in all future energy and water conservation project.

Please also be sure to provide details of any relevant accreditation or awards gained.

Thys Heyneke, Ross Davey, Marie Kerr and Trevor Samuels were given a special achievement award for driving the project from initial conception to implementation and verification.

CBRE-TOWER PLACE

TOWER PLACE-WASTE & ENERGY MANAGEMENT

AIM

Following the building takeover from previous Building Manager in February 2018 new General Manager has looked to implement a number of initiatives to support the building and its occupiers in further advancing environmental best practices. In order to deliver better waste management solutions, I had to re-tender the waste management contract and selected Bywaters as I waste management service partner.

Since October 2018, Tower Place has been working with Bywaters in order to bring about large increases in the site's recycling rate and overall sustainability. Tower Place started making improvements in early 2018, including completely phasing out the use of plastic straws and black bin liners but there were still significant enhancements to be made, Tower Place houses 10 tenants in total, with 5 of these being restaurants. In order to improve the site's waste management, it was, therefore, necessary to focus on correctly streaming all waste.

After initial audits, it was decided to focus on the following areas:

- Increasing the percentage of waste being recycled
- Adding extra waste streams to collect all waste produced by tenants
- Decreasing the overall amount of waste being produced
- Educating tenants about sustainable waste practices
- Reducing carbon emissions from vehicles visiting the site

ACHIEVEMENTS

Since implementing the improvement plan, Tower Place has seen significant sustainability improvements in a short space of time. Since Oct 2018, Tower Place's recycling rate has risen by 8.6% (from 44.6% to 53.2%). Additionally, 4 extra waste streams are now being collected: Food, Card, Coffee, and WEEE. Previously the only waste streams being collected were General Waste, DMR, and Glass.

At the same time as drastically improving the building's recycling rate, the site has also reduced the amount of waste being produced by 35%. The total weight of waste produced in the 6 month period October 2018 – March 2019 was 139 tonnes lower than the figures from the previous 6 months.

Waste Awareness Days have been held on site, along with the introduction of new signage and training for Tower Place's cleaning team to ensure that all waste is correctly segregated. All cutlery, disposable plates, and vending machine coffee cups are now made from Vegware, therefore can be disposed of in food waste bins.

Finally, in order to reduce emissions, all contractors servicing the site now use either fully electric or ULEZ compliant vehicles, and executive cars have been upgraded from Range Rovers to electric cars.

IN DETAIL

Tower Place has carried out a complete overhaul of its onsite sustainability practices. This has yielded impressive results since October 2018 across a variety of key areas.



Recycling: 8.6% Increase

From April – September 2018, Tower Place's waste was being sorted into 3 streams. The percentage of waste being recycled was 44.6% during this period.

From October 2018 the number of waste streams being collected rose to 7, with Food, Cardboard, Coffee, and WEEE being added. The percentage of waste being recycled over the 6 month period from October 2018 – March 2019 also rose to 53.2% - representing an 8.6% recycling rate increase in only 6 months, in addition to streaming site' waste for more efficient recycling.

To achieve these results, we carried out in-depth audits of Tower Place's tenants in December 2018 to ensure that bins were correctly dispersed throughout the building and signage was clear and easy to understand. Among the recommendations made after this audit was completely removing the use of black bin bags on site, installing mixed recycling bins at all tea points, and implementing the following custom-designed signage:

In addition to this, all cutlery, disposable plates, and vending machine coffee cups are now made from Vegware meaning they are disposed of in food waste bins (which can accommodate up to 20% Vegware) and sent for anaerobic respiration. Coffee cups onsite were previously made from polystyrene, meaning thousands of plastic cups are no longer being unnecessarily used at Tower Place.

Recyclable waste is sorted at Bywaters' MRF in Bow and

sent to recycling providers across the UK, while food and coffee waste is taken to Bio Collectors' anaerobic respiration facility. Any non-recyclable waste is transported via barge to Energy from Waste facilities, meaning no waste from Tower Place goes to landfill.

Waste Reduction: Cut by 35%

Alongside these improvements in waste streaming and recycling rates, Tower Place has also significantly reduced the amount of waste being produced in line with the waste hierarchy prioritising reduction.

From April – September 2018, 399.01 tonnes of waste was produced. In the six months from October 2018 – March 2019, this figure fell by 35% to just 259.93 tonnes. Included in this drastic reduction was a fall in the amount of non-recyclable waste from Tower Place of almost 100 tonnes:

This reduction in waste was predominantly achieved through implementing a new approach to the waste generated by deliveries. Prior to October 2018, contractors delivering to the site would leave wooden pallets and packaging materials behind, which would then be disposed of largely in general waste bins.

In order to improve sustainability and reduce waste, it was agreed that anyone making deliveries to Tower Place would take these items particularly the heavy wooden pallets away with them. This has not only contributed significantly to the 35% reduction in waste being produced but also prevented many completely serviceable pallets from going to waste,

as they can now be used by companies for future deliveries.

Education and Raising Awareness: Staff and Cleaning Teams Trained

In order to ensure all bins for both the existing and newly added waste streams were used and sorted correctly, Tower Place ensured that all staff and cleaning teams were provided with relevant information.

In order to educate staff across all Tower Place's tenants, CBRE and Bywaters' Green Gurus held a two-day Waste Awareness event in late 2018. For this event, CBRE made a replica model of Tower Place out of 25,000 coffee cups, alongside which was displayed an online link to a website where staff could guess the total amount of cups in order to win prizes such as attending beach cleans sponsored by Tower Place.



Bywaters' Green Gurus also staged an interactive waste sorting game, with prizes such as a Fairtrade hamper and recycled champagne flutes. Across the two days, hundreds of people participated and were made aware of the positive impact of sustainable waste practices, helping contribute to Tower Place's recent recycling rate improvement.

Separately from this event, Tower Place also took part in 2019's recent Earth Hour for which all non-essential lights were switched off for 24 hours. Energy measurements were taken and showed that Tower Place saved 35% of its usual electricity usage. A presentation on this was given to all tenants to encourage everyone to conserve energy where possible. Also, Tower Place took part in 2018 Clean City Award scheme and achieved a Gold Award (Special Commendation Winner).

CO2 Reductions: Driving Up Electric Car Use

Taking part in Earth Hour is just one example of the commitment Tower Place has made to reduce its carbon footprint. In line with London's new ULEZ, all contractors serving the building now either use low emissions or electric vehicles and all stationary vehicles now also have to turn their engines off while in the loading bay.

This also extends to tenants executive level management teams, who have now changed their company cars from highly polluting Range Rovers to a fleet of fully electric luxury executive cars, just one example of how everyone at Tower Place has come together in order to increase the site's sustainability.

Conclusion

Tower Place has made significant improvements to all aspects of its sustainability since October 2018. In just over six months:

- The recycling rate has increased by 8.6%
- Four new waste streams have been added

- The total waste being produced as fallen by 35%
- The amount of non-recyclable waste has been cut by almost 100 tonnes over six months
- Signage and bins have been updated in line with thorough audits
- Cleaning teams have been extensively trained
- Major waste awareness initiatives have been staged to educate staff
- All vehicles used by contractors and executive level staff are ultra-low emissions or fully electric

Tower Place and Bywaters are confident of continuing to increase the recycling rate of Tower Place in the coming years after such a strong start to the partnership.

CHAMBERLAINE CLEANING SERVICES

MAKING A DIFFERENCE – THE CHAMBERLAINE WAY

AIM

The problem-

- Climate disruption
- Ocean acidification
- Biodiversity decline
- Resource depletion
- Food shortage
- Water crises
- Poverty
- Inequality
- Geo political tensions ...



These areas of concern continue to be an existential threat to humanity. Triple Bottom Line (T.B.L) and Share Value are functional, well recognised frameworks to drive sustainability practices.

Nonetheless environmental sustainability needs, and social economic issues have not been prioritised in certain industries and organisations.

Some studies attribute this to classical principles and foundations which tend to maintain the status quo. The cleaning industry contributes a significant amount of environmental damage, from greenhouse gases to toxic chemicals and plastic entering the oceans.

A large amount of chemicals pollute rivers and aquatic life and pollution has affected the human food chain. Furthermore, cleaning products present significant health risk to users.

ACHIEVEMENTS

Chemical Consumption

In 2008, Chamberlaine adopted an ambitious strategic plan which sought to substantially develop the scope and effectiveness of all our activities and programmes.

One of our strategic priorities required us “to engage more effectively with our supply chain and local community”. As a result, we approached our janitorial supplier Janitorial Express and considered how we could collaborate to reduce the impact of chemicals within the company.

We opted for Diversey; a world leader in pollution prevention and environmental awareness. Using Diversey’s portfolio of high-quality concentrated cleaning products, we implemented reusable bottles which were clearly labelled. Each 1 litre bottle was equipped with an optic-style dosing cap, ensuring correct measurements and user protection.

Benefits

- Concentrated chemicals use less plastic, water and energy to manufacture
- Packaging and plastic waste was reduced by 60%
- Vastly reduced the amount of chemicals miles within the company (requirements of fewer deliveries)
- All packaging 100% recyclable

- Reduce chemical consumption In 2018, environmental concerns were revisited, focusing this time on the impact of active ingredients in our products, both on the environment and our employees.

Furthermore, volumes, quantities, packaging, and plastic consumption were examined. The transportation method to and from the recycling plant was also evaluated.

This collaborative analysis of our externalities brought greater emphasis to the critical connection between resource efficiency, raw materials, energy, and the impact of a product over its entire life cycle.

These reflections led to the decision to fully adopt a circular economic model by the end of 2019. By March 2019, an ambitious project had been designed to reduce our core products by 80%. With the assistance of our long-standing supplier Janitorial Express, we successfully remodelled our full portfolio of cleaning products and consumables.

By incorporating GREENSPEED products, we were able to transition from 60+ cleaning solutions to 5 core products across all our sites. In addition, we have worked closely with our clients to introduce initiatives that have allowed us to 'reuse' microfibre cloths and mops up to 600 cycles.

Our two main strategies are:

- a. In-house laundry facilities across our large sites.
- b. Collection and laundry drop-off service of microfibre products, synchronised with the deliveries of cleaning solutions and chemicals.

Consequently, both miles and our carbon footprint have been dramatically reduced.

This remodelling has significantly simplified our operations, during which quality, value, and service levels have

improved considerably

Benefits

- GreenSpeed use probiotics as an active ingredient: "biotechnology" cleaning products contain probiotic bacteria, mostly from the Bacillus family. Bacillus species in probiotic cleaning produce heat resistance spores, therefore they are resistant to the environment and act as disinfectant agents on a continuous cycle after its application, spores remain on the surface for days protecting it from bacteria and other pathogens.
- Reduction of plastic bottles: We reduced our bottles consumption from 26K in 2018 to 16K in 2020
- Mops and Microfibre cloths: Can be Re-use up-to 600 times. Drastically reducing waste, carbon foot print, energy, and raw material
- Production: Greenspeed cleaning detergents produce on a circular economy C2C (Cradle to Cradle)
- Bottles: Are not made from petroleum ingredients but consist of 75% sugar cane-based plastic and 25% recycled plastic.
- Dosage: 10ml per 5L water instead of the standard dose of 20ml per 5L, requiring 20% less packaging than a conventional formula



Eco-efficiency v Eco-effectiveness

Here at Chamberlaine we invest on Eco-effectiveness.

While eco-efficiency is targeted at minimizing the damage by "Slowing the process of destruction", The transition to an Eco-effective economy requires the re-think and redesign of products and how we use those. (Design for recycling, design for disassembly, design for remanufacturing).



We recognised that GreenSpeed adoption was a significant improvement. However, we needed to close the life cycle and subsequently partnered with iRecycle, in November 2019.

iRecycle began transporting our plastic bottles and waste for recycling via canal barge, using London's canal network. Due to this, air pollution and the city's carbon footprint have both been reduced.

IN DETAIL

Chemical Free Cleaning Regardless of being an SME's, Chamberlaine is a world-class, successful, and multi-cultural company, with an imaginative and inventive approach to cleaning.

In 2010, we pioneered H30 Technology, which charged ions of water to help separate contaminants from surfaces. This technology was then implemented for hard floors cleaning with the (Tennant ecoH2O) Ride-On scrubbing machine. It was also introduced for glass and stainless-steel surfaces via the handheld Ionator Spray. Owing to the high initial cost of this new technology, the full deployment encountered some limitations, such as procurement and maintenance of equipment.

The case for promoting cleaning excellence and engaging our clients' interest with "Chemical-Free Cleaning" technology has never been stronger. Our value proposition to provide this solution across all our major contracts was introduced in 2019, with the more affordable and developed Purex System Technology. Since then, we have been able to provide benefits to society and the environment while being a profitable company.

For Chamberlaine, it is critical that every employee, stakeholder, and supply chain member understands that the economy must serve humanity and the planet, and not the other way around

With this in mind, we have worked tirelessly over the last two years with our partner Craftex, driving

forward the Chemical Free Initiative, with the most advanced, effective, and affordable PUREX SYSTEM. Purex is created through a unique seven stages of microfiltration, reverse osmosis, and hydro embellishment.

The final product is super purified water with molecular instability, which traps and absorbs dirt and contamination to gain stability when passed over material surfaces. This exceptional strategic effort has materialised with 80% of our major contracts successfully adopting Purex systems as one of the core products to conduct daily internal cleaning operations.

From a total of 1.48m sq ft, Purex has been instrumental to ensure daily cleaning and disinfection across offices, washrooms, toilets, and common areas equalling 575,804 sq ft.

Benefits

- Effectiveness: Purex performance has been monitored by (ATP) testing scoring (4,5 – 6) ultra clean band
- At workplace reduces cost by more than 50%
 - No electricity is required as it works on gravity principle
 - Purex has a shelf life of 8 to 10 months
- No chemical, no waste!" By product is just pure-micro filtered water
- Lower carbon footprint. Onsite production reduce deliveries
- No COSHH requirements
- Healthier client environment: No risk of chemical exposure, increase health and wellbeing for operatives
- Increase productivity: Chemical back order and workplace downtime is a thing of the past. On site production increases productivity
- Cost effective: Purex massively reduces running cost compare to traditional cleaning methods.

COLAS

COLAS RETREAD LINCOLNSHIRE COUNTY COUNCIL

AIM

Colas is a company with a long-established sustainability strategy on reducing our impact on the environment and also has a large range of green innovations.

Colas is one of the five largest recyclers in the world, regardless of the sector or type of material. As a major producer and consumer of construction materials, Colas has developed ways to recover and recycle waste produced in road construction as well as materials resulting from demolition or renovation from public works or other industries.

This approach is part of the broader context of the circular economy with a reduction in construction costs, savings in materials and carbon resulted from transport and energy. Colas wanted a solution which would reduce carbon, develop a solution for delivering circular economy to reduce waste and virgin material use and cause minimum disruption compared to conventional resurfacing works.

On-site recycling of pavement is an especially interesting technique used to limit purchases of materials and reduce transport costs (and thus our carbon footprint). More than 7.4 million sq.m of pavement was recycled on site in 2019. We want to now increase our ability to develop in-situ recycling with new solutions of Valorcol and Novacol.

ACHIEVEMENTS

Colas has carried out a life cycle analysis assessment of Retread using the system SEVE. This showed that this process provides a saving of 77% in CO₂e. The process also provides a minimal or zero waste sent to landfill.

In-situ recycling of existing materials with minimal use of imported virgin aggregates results in fewer lorry movements and even lower scope 3 CO₂ emissions which will help deliver solutions in order to meet the governments commitment to being carbon net zero by 2050.



Because of the nature of works it can safely encapsulate tar-bound material therefore reducing contaminated waste costs and also causes minimum disruption and delivers shorter construction periods.

IN DETAIL

A ROAD RECYCLING COST-SAVING PROCESS THAT REDUCES CARBON FOOTPRINT BY UP TO 77%

To drastically reduce CO₂ emissions when resurfacing, Colas provided a carbon-friendly road recycling process for Lincolnshire County Council (LCC). Known as Retread, heavily deformed, potholed, and deteriorated carriageways were pulverised and re-used in-situ, minimising disruption, waste, and the cost associated with conventional resurfacing.

As well as reducing emissions, further benefits included: Minimal or zero waste sent to landfill In-situ recycling of existing materials with minimal use of imported virgin aggregates results in fewer lorry movements and even lower CO₂ emissions. Shorter construction periods, minimising disruption.

THE RETREAD PROCESS

First, our experienced engineers carry out core sampling to establish the depth of construction and binder content, alongside tar-contamination checks. If suitable, the road is closed using our in-house Traffic Management operatives, allowing the road to be pulverised with a specialist planer. Using a custom-made grader, the surface is re-profiled to ensure the drainage is adequate and that it ties into the existing kerb and ironwork levels.

A bitumen emulsion, both designed and

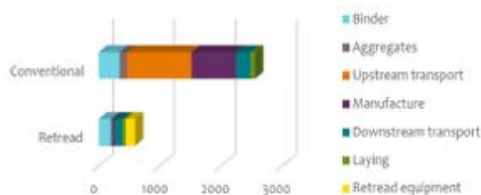
manufactured by Colas is then sprayed to a calibrated rate and incorporated. This coats the pulverised aggregate and encapsulates any tar-bound material. Using dead-weight and vibrating rollers, the site is then compacted to the required stiffness with a further application of bitumen emulsion applied.

A 14mm chippings application is then applied to close surface voids. A final 6mm double dressing completes the site, leaving an attractive and uniformed finish. When compared to conventional surfacing processes, LCC recognises the economic and environmental benefits of the Retread process.

Throughout our 8-year relationship, Colas and LCC have worked to recycle the road network with our Retread process. LCC continues to work with Colas to improve their carriageways throughout the county. Local Authorities have a duty to deal with contaminated waste created by traditional plane-out and inlay resurfacing on roads containing

Comparison of Total Energy Consumption, GJ

| Structure | Binder | Aggregate | Upstream Transport | Manufacture | Downstream Transport | Laying | Retread Equipment | Total |
|--------------|--------|-----------|--------------------|-------------|----------------------|--------|-------------------|---------|
| Conventional | 339.5 | 122.9 | 1,053.8 | 721.8 | 239.8 | 76.0 | - | 2,553.8 |
| Retread | 195.9 | 31.5 | 2.0 | 29.3 | 127.5 | 54.4 | 153.0 | 593.6 |



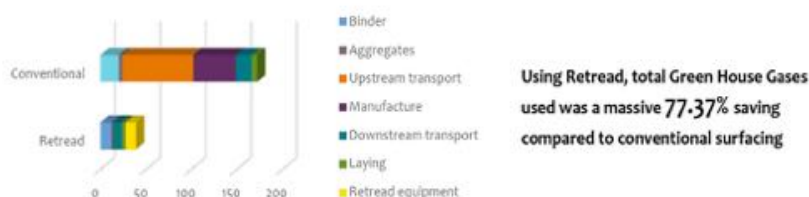
Using Retread, total energy consumption used was a massive **76.76%** saving compared to conventional surfacing

coal tar. Instead of stockpiling or re-processing off site, Colas' Retread process safely and legally encapsulates tar-bound material.

All processes are carried out at ambient temperature, meaning there is no risk of fuming coal tar products. The project has been funded by Lincolnshire County Council as part of their Annual Highways Maintenance Budget. In 2019

Comparison of GHG Emission in Equivalent CO₂ tonnes

| Structure | Binder | Aggregate | Upstream Transport | Manufacture | Downstream Transport | Laying | Retread Equipment | Total |
|--------------|--------|-----------|--------------------|-------------|----------------------|--------|-------------------|-------|
| Conventional | 22.0 | 4.4 | 77.5 | 46.9 | 17.6 | 5.8 | - | 172.2 |
| Retread | 11.5 | 1.6 | 0.2 | 0.7 | 9.4 | 4.2 | 11.5 | 39.1 |



we completed a comparison against conventional surfacing using the Retread process. We completed 145,00m² over 22 sites, which incorporated recycling in excess of 10,000 tonnes of Tar Bound material by utilising existing stockpiles of contaminated material.

Due to the geology of the area, the sites had severe potholes and rutting throughout. This developed into a hazard for local farming industry and residents and in severe cases, resulted in damage to members of the public vehicles. Reprofilng the roads reduces traffic noise and improves skid resistance, benefiting the local community and visitors to the region, including residents/drivers/cyclists and walkers.

The environment naturally benefits from the substantial reduction in CO₂. However, once the sites have been recycled, their lifespan is extended for a further 15 - 20 years, further benefitting the environment due to the lessened need to resurface.

The Retread process provides a low-cost solution to a traditionally high-cost maintenance issue, reducing the overall whole life cost. Continually monitoring and testing the performance means more chance to use the recycling process, in turn supporting future Net Zero Emission targets. Knowledge and lessons learned throughout this project will also be shared and developed further in the industry, resulting in further environmental benefits in the future.

The construction layers of the sites selected contained 'tar-bound' material, meaning as well

the site.

With Colas' unique down milling procedure integrating the tar-bound material in the sub strata, the site now has a structurally sound, visually pleasing surface that will withstand the localised farming traffic. Other Authorities will be experiencing issues with existing "Tar-Bound" sites. This could include growing stockpiles of Tar-Bound material or substantial costs in disposing the product/waste.

The Retread process and methodology can be mirrored with any local authority that has comparable sites and surplus Tar-Bound material stockpiles. Our success can be attributed to sound environmental management principles of risk identification, planning, execution, and review. This ISO-aligned framework can be readily applied to all Retread projects, and we are happy to share best practice.

The innovative approach we have employed on this project is also available to the wider market. The key success during the project was the collaboration between LCC, the principal contractor and Colas. LCC initially outlined the Tar-Bound issues and the stockpile that was rapidly growing. Colas' Technical department then worked closely with Operations, Lincs Labs and LCC to design a Specification.

Early collaboration with stakeholders led to impressive CO₂ savings. This project was a positive example of how collaborating early can achieve remarkable results.

CRYSTAL LAGOONS

PUBLIC ACCESS LAGOONS™: HELPING TOURISM REDUCE ITS CARBON FOOTPRINT

AIM

Transportation is responsible for 49% of CO2 emissions on earth. The COP 25 estimated that the carbon footprint of transportation (related to tourism and recreational travel) will increase from 1.59GT to 1.99GT, between 2016 and 2030.

Trips to natural beaches generate about 35 million CO2 tons per year, mainly from car and plane rides. By bringing the beach lifestyle to the city through Public Access Lagoons™ projects, also known as PAL™ lagoons, the total carbon footprint can be reduced by more than 40% (nearly 14 million tons of CO2).

City dwellers can access the beach walking, biking, through public transportation, or by driving to the urban beach entertainment complex instead of having to take a plane to reach a distant natural beach destination.

The estimated 484 PAL™ projects worldwide would each receive 800,000 visitors annually (and more), and would decrease by around 50% the visits to natural beaches, resulting in hundreds of millions of fewer trips, with a considerable reduction in carbon footprint, which is much more than any other known technologies is currently achieving.

ACHIEVEMENTS

The development of PAL™ lagoons greatly reduces trips to natural beaches, by nearly 40%, lowering CO2 emissions from 35 to 21 million tons annually. Journeys to PAL lagoons would result in reducing emissions from

35 million to only 18,5 million CO2 tons, preventing the release of 16,5 million tons of CO2 to the planet.

Considering that visitors to PAL™ projects around the world would create just 2,5 million tons of CO2, the decrease in carbon emissions from transportation related to beach tourism would be 40% (nearly 14 million tons of CO2).

It's important to remember that 14 million tons of CO2 are equivalent to the total use of energy for 365 days of 2,306,968,297 homes, or travelling 51,368,788,238,561 kilometers by car burning fossil fuels.

Crystal Lagoons® has already 810 PAL™ projects in different stages of development and planning with partners in South Korea, Pakistan, USA, Japan, Spain, Thailand, Colombia, Angola and other countries, increasing the company's portfolio of projects around the world.

Amidst the pandemic, people living in communities with a Crystal Lagoons® amenity had the opportunity to enjoy a piece of the Caribbean ocean without the need to travel abroad, and in projects with lagoons open to the public.



IN DETAIL

The concept and technology developed by Crystal Lagoons®, patented in 190 countries, consists of creating idyllic beach life anywhere in the world, whether on unsuitable beaches, off-shore land, deserts and even in the middle of the cities, with very low construction and maintenance costs.

The technology that allows these immense bodies of water to be maintained in a crystalline state uses up to 100 times less chemicals than a conventional swimming pool and only 2% of the energy of a traditional filtration system.

Likewise, it is a sustainable technology in terms of water consumption as it is a closed circuit, which can use fresh, sea or brackish water. It consumes 30 times less water than a golf course and only half the water than a park the same size.

After revolutionizing the real estate sector for 10 years, Crystal Lagoons® began a new corporate stage, revolutionizing cities with Public Access Lagoons™ projects, also known as PAL™ projects.

PAL™ lagoons are changing the lives of millions of people living in urban settings by bringing a portion of the ocean to their doorstep, similar to what happened 200 years ago when urban parks were created. Today, most cities around the world consider parks and green areas a part of their configuration. The same phenomenon is happening

with Public Access Lagoons™ developments. People will no longer have to travel to the ocean; they will find it a few steps away.

PAL™ projects are anchored by monumental crystalline lagoons suitable for bathing and nautical sports surrounded by white sands and palm trees, which create idyllic beach life just a few meters from people's home and become the most beautiful places in the city.

Events, trade shows, fairs, food-halls, weddings, concerts, day clubs, recreational and cultural activities, etc., can be all be held in this paradisiacal environment equipped with multiple spaces including beaches, a wedding peninsula, terraces, domes, restaurants, retail, beach clubs, and amphitheatres, making them the meeting point of the 21st century.

These developments deliver economic and human benefits. They can completely revitalize and transform spaces such as shopping malls or underperforming retail assets, amusement parks, vacant land, racetracks infields, golf courses or any underutilized land that wants to be converted into a profitable business.

For people, PAL™ projects offer a new public space that improves the quality of life of millions of people, providing social inclusion, entertainment, and relaxation, especially in congested cities with unfriendly or unsafe public spaces.



In addition, because PAL™ projects provide beach life and entertainment close to people's homes, they reduce the impact that visitors have on natural tourist destinations and their biodiversity, since they can now access recreational options within their communities and contribute to a reduction in the carbon footprint caused by air and car travel.

It has been estimated that carbon footprint resulting from tourism and recreational travel from people in cities to beach locations, considering trips by car and by plane, has a great impact in the total CO₂ emissions.

By bringing beach life to cities all over the world, and considering the locations where these projects are being developed and negotiated, it is conservatively estimated that the total carbon footprint can be reduced by more than 40%, by changing the way that people in cities have access to beach areas, allowing them to travel short distances either by walking, biking, using public transportation, or driving to the urban beach entertainment complex and not having to take a plane to reach a beach destination. Consequently, this also reduces the impact that tourism has on the marine ecosystem and beach erosion, aiding in the restoration of those natural landscapes in the long run.

These estimations are based on studies of how many Public Access Lagoons™ projects can be built around the world, which estimate a yearly amount of visitors of more than 800.000 people per project, and therefore a decrease of 50% in visitors to natural beaches that choose to go to Public Access Lagoons™ developments in the middle of cities instead. This result in hundreds of millions of fewer trips, with a considerable reduction in carbon footprint, which is much more than any other known technologies are achieving.

The PAL™ concept has been a great success with 810 PAL™ projects in different stages of development and negotiation to be developed by Crystal Lagoons® clients and partners. This includes 30 projects in South Korea being developed by Nexplan-Hyundai consortium, 16 project across different cities in the United States by Epic Adventure alongside Universal Music Group and Mattel, 5 developments in Orlando in association with ADELON Capital, 15 projects in Pakistan with Ary Digital, and many more that are currently being planned or are in advanced negotiation and that will bring the idyllic beach lifestyle to all of these cities in a sustainable way.

The Crystal Lagoons® technology has been licensed to different real estate and PAL™ developers around the world, with more than 1.000 projects in different stages of development and negotiation, demonstrating a substantial track record that the technology is a huge success and can be replicated anywhere through a Crystal Lagoons® licensing agreement.

Considering seasonal limitations, a new technology developed by Crystal Lagoons® called Hot Reef™, will be another driver that will position Public Access Lagoons™ projects as “local destinations” preferred year-round, even by people living in colder regions.

This state-of-the-art Hot Reef™ technology will keep the water at 28 degrees Celsius (82°F), providing optimal bathing conditions during the summer and winter months alike. This is especially important in the case of PAL™ projects, as thousands of people will be able to enjoy warm beach life sustainably and at a low cost.

Additionally, lagoon areas with Hot Reef™ technology can be covered by domes, providing both hot water and air thus extending the use of the lagoons throughout the whole year, including winter and rainy days.

Like all technologies developed by Crystal Lagoons®, it is sustainable, and will enhance the tremendous success of the PAL™ business model, which has already been patented in more than 190 countries.



CWMBRAN CENTRE CBRE

CWMBRAN ENERGY MANAGEMENT PLAN

AIM

Our aim is to embed sustainable activity into everything.

Sustainability does not just involve minimising consumption of utilities, raw materials but how we engender sustainability within working partnerships

Our role has not just been to implement best practice within the Centre but to engage with the wider community by education, informing, demonstrating.

1. Reduction of Gas, Water & Electricity consumption
2. Sustainable procurement
3. Introduce Waste Management Plans, increase recycling, reduce landfill, promote best practice
4. Develop a Green Transport Framework
5. To be at the heart of the community while promoting best practice
6. Changing attitudes with our 'forward thinking maintenance' initiative.

The principle = educated decisions through client / contractor relationships.

The ethos is if equipment fails, we explore the most cost and environmentally efficient solution of cost v's risk.

ACHIEVEMENTS

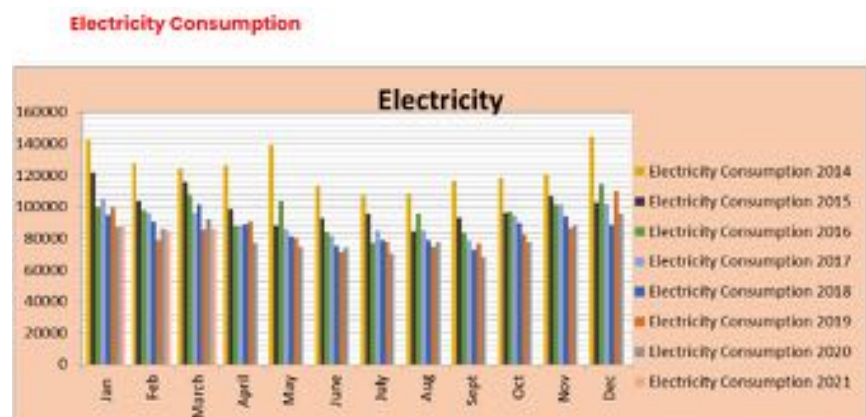
- We embarked on a rigorous review of our waste

management operations in order to improve facilities.

We are now Zero to Landfill.

Today over 64% of our waste is segregated on site.

- Electricity, Water and Gas have seen huge reductions of 44%.
- The introduction of our Energy Management Plan has enabled us to focus on key savings and considers future 'gain' areas going forward reducing our carbon footprint.
- By introducing LED lighting throughout the Centre and our Car Parks
- Reviewing and upgrading our BMS control system.
- The installation of occupancy sensors and reducing flushing levels
- Educating staff and tenants in reducing usage
 - Introduction of new burners into heating boilers
- We have developed our Green Travel Plan.
- We have organised and hosted sustainability awareness days for all stakeholders.



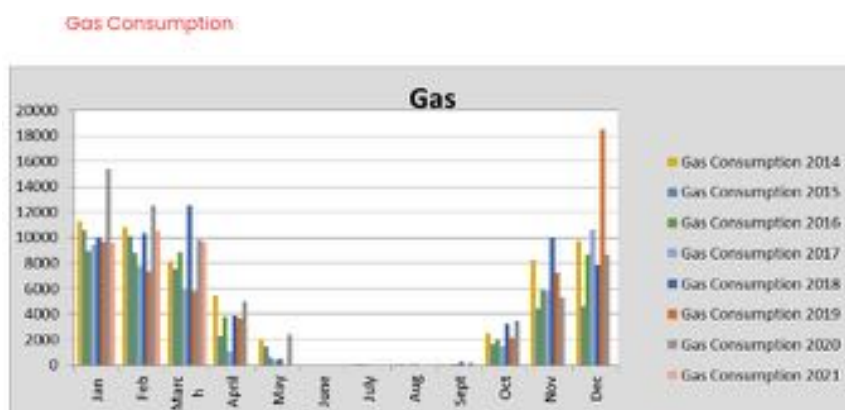
- Hosting charitable fund-raising events, engaging with local schools and Community delivering best practices. Engagement with Local Council & all Emergency Services is key.
- Implementing our Green Procurement Plan, identifying not just greener alternatives to managing the Centre but also to our contractors.

IN DETAIL

1. An investment of £120k+ from Landlord / Service Charge into the replacement of LED lighting into several of our car parks. Installing in excess of 2000 lamps increasing burn hours per lamp from 20,000 to 55,000 hours. Reducing wattage from 58w per unit to 22w. Our engagement with 'Earth Hour' has captured further savings and lowered our carbon footprint. During the hour, due to switching several lighting areas off, we achieved a saving of 40KW. The cost of change has been £10k with a payback of 9months Electricity - Since early 2008 we have a live energy database. It includes small project work, improvements and upgrades. We use opportunities with breakdowns to refit/ retrofit LED lighting. We are nearing 83,242watts of savings through continual innovation and improvement year on year, with the installation of LED lights into Car Parks. We ensure installations are carried out on 24 hours circuits in the first instance to make the largest gains. Large savings have been made through our Building Management System Review. Around 2520 Minutes have been reduced to the time schedules of various light systems throughout our Centre.
2. Carbon Arc is an Integral supported energy saving initiative that has been implemented at Cwmbran. The whole Condition Report process investigates plant and equipment all the

way down to component level, ensuring any weaknesses are potentially found and suitable replacements are readily available. The goal of Carbon Arc is to support the reduction of Energy consumption through staff communications and active participation. Ensuring staff members aware that even the smallest of changes. Carbon Arc provides ideas and resources to motivate everybody to save energy.

3. At Cwmbran, we began our quest to increase our recycling percentage by increasing our recyclable streams on site to 10. On site, we interrogated our general waste to seek further streams of waste that weren't previously considered. This led us to discover that local charity shop tenants were sending up to 150 bags of textiles to landfill on a weekly basis. Continuous liaison with the tenants enabled them to revert to recycling their textiles as rags, therefore avoiding almost 2 tonnes of waste going to landfill per month alone.
4. Communication and cooperation with tenants played a large part in the success of the site in achieving their enviable recycling rate. Each tenant was individually introduced to the waste management process of the site and their responsibility to separate waste at source. This was especially important when introducing food waste recycling, where an introductory newsletter was sent to all staff which was followed up by regular individual meetings.
5. All Management and FM provider staff have been trained to understand the new processes,



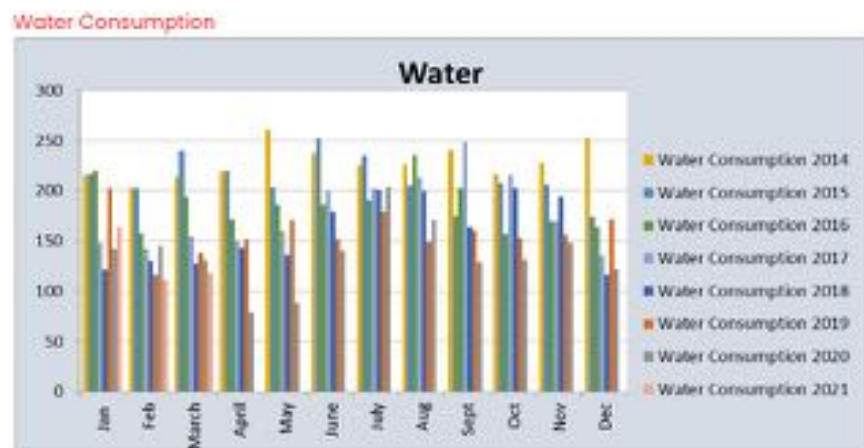
as well as the importance of recycling enabling buy-in.

6. Cwmbran Shopping Centre is an open 24/7 Town Centre and a complex site with an annual footfall of around 18 million per annum which is ever increasing. It consists of over 170 retail tenants which are located over a 52-acre site. The site continues to drive the message of recycling to tenants as well as the wider community with the development of an annual sustainability event. The centre has been given recognition with BSI PAS 99 ISO 9001 14001 18001 accreditation. In addition, 9th Consecutive Gold Medal ROSPA.

7. Water – We have worked closely with WAS (Water Audit Services) an independent water specialist, who are members of the Green Organisation. This has enabled us not only to save on usage but also ensure we are committed to raising awareness of water as a valuable resource. Through our Energy Management Plan, we have identified saving on consumption by reducing flushing levels of 85 toilets which equates to a saving on average of 1400 litres per day. The introduction of systemisers, sub-meters and lowering cistern water levels has enabled us to identify further savings. The introduction of a water irrigation system has reduced usage considerably on our planting beds. Our landscaping team are also harvesting rainwater.
8. Gas – Our usage of gas for our heating boilers has been minimised to its lowest level by introducing a rigorous maintenance regime that increases the efficiency of our boilers to 95% and lowers our carbon footprint considerably. The daily review and monitoring of weather conditions enables us to adjust our time

schedules accordingly in the control of Office blocks and multi tenanted buildings across the Centre. Future investment is planned to install isolation valves to multi-occupied buildings enabling greater thermostatic control of temperatures.

9. Travel plan – The introduction of our travel plan to our staff and tenants on the Centre, has identified many initiatives to all. Incorporating



our 'Shared Lift' best practice, 'Purchase a bike' initiative and the introduction of cycle racks on the centre are but a few of the advantages of our plan. Combining these efforts has been a 're-brand of the Centre at a cost of £250k that has enabled us to supply Information & Awareness' signage

10. Community engagement – This has been a key factor for us in raising sustainability awareness. The sustainability awareness day was devised in order to support environmental objectives and targets and to engage further with our retail business tenants and the wider community. Our annual Sustainability Awareness days captures the following benefits:
 - Raised awareness of sustainability
 - Enhanced stakeholder relationship
 - Encouraged ownership and positive behaviours

- Improved knowledge on sustainability issues
- Improved sustainability performance through the introduction of new initiatives on the day
- Increased moral and team spirit of personnel
- Improved company image

For us to have captured the full potential of delivering our Sustainability days, we:

- Initial formation of an Event Working Committee to formulate ideas and plans
- Engaged with local schools to promote the event and to invite competition for a winning logo
- Liaised fully with all tenants, obtained their buy-in through a 'Special Offers' incentive
- Created wholesale networking opportunities in the wider community through the participation of local charities and organisations
- Created a blueprint to roll out across the business to host similar events at other locations

Energy Management Programme - Cwmbran Centre
This year, Cwmbran Centre's 'Energy Management Plan' has enabled us to achieve significant savings in energy usage throughout the Centre. This can be seen not just through energy savings but seen in delivering Environmental and Sustainable Best Practice. In recognition, the scheme has achieved 'Gold Green Apple World Ambassador' Award. The Programme is a resource for the Centre catering not only for the requirements of the business, but for incessantly reviewing procedures, usages, intended developments; ensuring that all measures taken are sustainable.

The Team engage to heighten awareness to tenants and surrounding local communities.

General Rees car park- LED lighting conversion of 591 fittings would contribute to a 9-11% overall reduction across the Centre. The current savings

of CO₂ per year stand at an impressive 70.4 tonnes and a further 125.2 tonnes will be saved per year on project completion.

A saving of £9,538.80 P/A has been achieved with a further saving of £12,128.40 being saved on completion. The cost of the project was £24,456.72 with a payback period of 2.16 years

Llewellyn car park- LED lighting conversion of the 723 fitting in the car park provides a saving of 126.9 tonnes CO₂ P/A. The current cost per annum of the 978x T8 lamps is £41,277.60 PA. With the conversion to T8 24w LED bulbs, a saving of £17052 is achieved to bring the annual running cost down to £24,242.4. The investment for the project was £44,049.12 with a payback period of 1.81 years. The BMS system was interrogated and results can now be seen. Bus station - canopy lights were changed in September that has now shown us a saving of 40% energy usage across the canopy replaced 55w fittings with 38w fittings saving 250w of energy.

Llewellyn Road High Level Lamp Posts - October Replaced 150w light fittings with 30w LED fittings producing 80% saving from 2000w to 360w. Powys house service area November - replaced 150w flood with 50w LED. Prior to installation of our Christmas light in November all lamps, frames and decorations were assessed and investment was made to purchase new fittings that has now enabled us to be 100% LED lighting going forward that when energy usage is evaluated for the same period year on year will identify substantial savings.

Tenant awareness has been a vital part of the overall energy reduction scheme on the centre. Through one-to-one communication, sustainability events and the reassurance of the Centres commitments, support and encouragement provides the necessary motivation to relay the message to the occupants of the 170+ units across the centre and the wider community. This collaboration ensures the centres environmental values are driven forward.

DAEJAYON

IGCAUS - YOUTH ENVIRONMENTAL CLUB ORGANIZATION

AIM

International Green Campus Association for University Students [IGCAUS] is a network of college students, uniting environmental clubs and groups around the world for the purpose of tackling climate crisis by fostering college students as environmental activists around the world.

Through the network, we promote the development of environmental clubs and green campus movement of college students. Also, by supporting activity contents, campaign design and goods, seminar presentation materials and providing various environmental activity programs every year, we encourage active participation of students from environmental clubs during their school years. Through this, college students who participated in IGCAUS will be fostered as environmental talents, working in the environmental field after graduation.

ACHIEVEMENTS

There are about 1,896 members of IGCAUS in 107 universities around the world. Our main activities are improving awareness and making college students take action through environmental campaigns, seminars, forums on campus. Environmental campaigns are held targeting about 1,000 people per year.

Through energy saving activities, about 419,416.16kgCO₂ were reduced until 2019 by installing outlet timers, walking zones and conserving paper. By creating an online community, where students share their activities and have discussions on the environment, we provided opportunities to broaden environmental knowledge through sharing and giving feedbacks on the activities of environmental clubs in various countries.



#MakeZero #MakeGreenCampus Campaign

Under the theme "1.5°C and Green Campus,"

24 campaigns were held in **11** universities in Seoul > reduced **3,129** kgCO₂



Campaigns are held on various environmental issues like green art campus, walking zone, water footprint, plastic-free, and energy conservation every year, encouraging students to participate in raising environmental awareness and making green campus. Free topic campaigns are carried out through Eco Exchange Program, sharing activities and learning about environmental problems of different countries.

Every year, we hold an eco-league for environmental clubs to encourage students' and motivate them to continue their activities by sharing activity results and prizing excellent teams. Especially, excellent environmental activity cases are provided through the eco-league so that other environmental clubs can apply it to their activities.

IN DETAIL

IGCAUS, network of campus environmental clubs, was established in March 2012. Overcoming global warming and responding to climate crisis should be led by youths who are the future generations. However, there are only few youths who are interested in the environment and take action.

This network was created to provide college students with the opportunity to respond to global warming and climate crisis by making them, who can freely carry out environmental activities, take action and creating a network of environmental clubs for college students around the world. Every year, we developed a project that environmental clubs can carry out, sponsored by the Ministry of the Interior and Safety of the Republic of Korea or the Seoul Metropolitan Government. We support environmental clubs on campus to operate the club independently and steadily by supporting joint development of contents, environmental campaign materials, seminar

materials, and designs needed by each club, as the club members of IGCAUS. In addition, environmental projects are carried out every year so that university clubs can participate continuously.

Through energy conservation campaign, we have installed outlet timers on campus since 2012. Until now, about 971,169.94kwh has been saved, which is about \$257,214 economically (based on the electricity bill of South Korea). Through IGCAUS, environmental club students can share their activities with students around the world. In addition, poor resources, ideas, informations, etc. are supported by environmental programs and materials so that more environmental activities can be carried out in each country.

IGCAUS activities are fostering college students and youth environmental activists. Environmental clubs are established in places where there is no environmental club, and green campus movements are started in universities where environmental clubs are established. Through the IGCAUS program, environmental education is provided to the club members and continuous support and development of clubs, the college students who participates in environmental clubs are continuously fostered and the green campus movement is also developing. In addition, students from environmental clubs foster youth environmental leaders by conducting environmental education, club operation and green school movement through green school activities

#MakeZero #MakeGreenCampus

DAEJAYON



Campus Energy Saving Activities

Installed 37 automatically standby power cut-off plugs > Reduced 19,148 kgCO₂

Installed 260 outlet timers > Reduced 17,335 kgCO₂



in elementary, middle and high school. Through this experience they possess the capacity of a sustainable global leader. Moreover, awareness raising and practical activities are continuously being conducted through many environmental campaigns on each campus. Timer outlets have been installed on campus in consultation with schools, and so far, the amount of standby power cutoff and energy savings are being accumulated.

In 2012, IGCAUS students of Kookmin University installed separate collection box on campus and carried out awareness raising campaign. This made the university to move by installing separate collection box throughout the campus and measures have been made for the waste separation and discharge, making continuous resource recycling until today. Like this, IGCAUS has led to a large number of environmental protection activities at the university level from the awareness raising and practical activities of each university campus member.

The IGCAUS is the first in the world to provide online exchanges and online conference for environmental clubs around the world to share activities online and to exchange environmental issues and personal ideas in each country.

In addition, as IGCAUS is an environmental club supporting project, which helps establish environmental clubs, support activities and contents on each campus, and helps develop and operate clubs. Compared to other organizations, this project is innovative as college students who are the future generations carry out environmental activities through environmental clubs and expand their knowledge in the field of environment through online exchange activities.

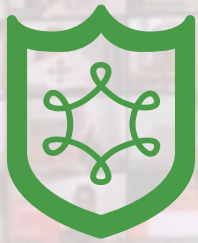
Youths are the age group that all institutions pay attention. The network of youth, like IGCAUS, will provide opportunities for institutions in various environmental fields to communicate with future generations. In particular, various environmental

activities and projects conducted in each institution can train environmental leaders by inducing college students to take interest and participate in various environmental fields through this network.

By supporting IGCAUS materials and activities, environmental club students actively carried out environmental activities. Environmental clubs are one of the clubs in poor conditions, and there are many difficulties in continuous operation due to the lack of appropriate support and contents. However, many clubs continued their activities through IGCAUS.

In the future, we will search and support more environmental clubs that need support so they can have a solid foundation on each campus. In addition, we will support environmental club program for green campus in each university. Furthermore, we will build an educational program to train college students, who participates in the green campus movement, as environmental activists. So after graduation, they can respond to climate crisis by environmentally friendly activities in their fields.

We won a total of seven awards through IGCUAS. In 2016, we received the Green World Awards 2016 for non-governmental organizations Global Gold Winner in recognition of carrying out environmental activities on each campus (with IGCAUS members). In 2017, we received the Green World Awards 2017 Global Gold Winner in the education/training sector in recognition of educating college students (who are the members of IGCAUS). In 2020, we received a citation from Gyeonggido Assembly in recognition for contributing to the Green Campus Movement (with IGCAUS members).



DAEJAYON

International
Non-Governmental
Organization



NEW NORMAL
NEW EARTH
ENVIRONMENT FORUM
FOR INTERNATIONAL UNIVERSITY STUDENTS 2020



Environment Forum
for International University Students



11,637 MEMBERS



12 BRANCHES



187 CAMPUS CLUBS

We respond to climate crisis and create a sustainable society by
fostering environmental leaders of the future generation

GREEN SCHOOL



- Support Little DAEJAYON Environmental Clubs
- University Student Environment Instructor Visiting Program

GREEN CAMPUS



- Build IGCAUS Network, Support Club Activities
- Campaign to Respond Climate Crisis

GREEN WOLRD



- Build Global Environment Network
- Encourage Participation of Global Citizens

DARK SKY

DARK SKY® ALQUEVA: BEYOND SUSTAINABILITY

AIM

Dark Sky® Alqueva is a stargazing destination with a clear mission, and which incorporates a short, medium and long term sustainable strategy.

Dark Sky® Alqueva is a region which covers an extensive area of almost 10.000 square kilometers around the Alqueva Lake. The destination was created in 2007 and, owing to the quality of its night sky, this area has been certified as a Starlight Tourism Destination since 2011. The Dark Sky® route offers a wide range of night-time activities for astronomical observation, with the naked eye or using telescopes. In addition to these activities, complementary experiences can be enjoyed both at night and daytime.

Astrotourism can be a great adventure, and under a protected night sky, many activities can be organized such as stargazing sessions, blind wine tasting, night canoeing, yoga sessions, walks, bird watching, wildlife watching, Dark Sky® Parties, astrophotography workshops and much more.

The creation of a tourism offer around a beautiful and protected night sky allows us to extol the feelings that many of us had when we were young and dreamed of being astronauts. This is very important and our goal is not only to bring back that connection between people and the night sky, but also to reconnect people with the night itself in order to respect it.

Dark Sky® is not only a product, it is above all a concept and a brand destination with two missions: to protect the night sky which means to reach almost zero light pollution and to develop destinations under an integrated sustainable model of development.

IN DETAIL

The mission of protecting the night sky promotes the objective of reaching almost zero light pollution. Light pollution has negative impacts on human health, on the environment and ecosystems as well as at an economic level.



Portugal, like the European Union, has opted for energy efficiency policies instead of policies to combat light pollution, forgetting the transversal nature of this form of pollution.

There is not a lot of national data to support the daily waste of light but one of the latests scientific studies indicates that Portugal uses four times the intensity of what would be needed.

However, the adequacy of the luminaires and the reduction of energy consumption is not very welcomed in areas where part of the population still remembers what it was like to live without electricity. What we considered an improvement in the quality of life at many levels, may not be accepted as such by the local community. In addition to this, we should add the lack of interest of local public policies in making changes in sectors that may cause loss of votes.

Combining all of this and summarizing it, the problem of light pollution by its nature could be a type of pollution more easily solved, but due a combination of issues, it has turned out to be one of the most challenging obstacles. And because of it, we needed to use alternative ways to change mentalities, create empathy with the night sky and show how important is to preserve the night sky as a humankind heritage.

The Dark Sky® Alqueva uses the night sky not only as the main touristic resource but also as a way to encourage the implementation of an integrated sustainable strategy. Another way to support the protection of the night sky is the use of landscape astrophotography to create empathy towards our effort by understanding what a sky full of stars means and represents. People who have never saw the Milky Way at naked eye will hardly understand what they are missing and how important it is to bring back the night.



The pandemic situation delayed or restrained some actions, but we didn't stop to work to fulfill our mission. We can inform you that our Network of Destinations in Portugal is being consolidated and that helped us to reach more attention about our work and our way of seeing sustainability. Nowadays, more than 14% of the national territory working under the concept and destination brand Dark Sky® and the concept ATT-Astrotourism®.

To be more effective it is important to be a part of the national public strategy for tourism and as a result of our work from the last years, the Network of Dark Sky Destinations in Portugal is included in the National Plan for a More Sustainable Tourism, launched by Tourism of Portugal last month (June 2021). And this has specific actions that are related with the objective of reaching almost zero light pollution but not only as it considers the whole strategy and mission of Dark Sky®.

Since 2018 we have a Light Pollution Plan in place with actions involving different target audiences as the best way to raise awareness of the problem of light pollution. The actions held last year helped us to receive more attention from the authorities who have responsibilities at a territorial management level, and our organization, the Dark Sky® Association, is actively involved in the strategies that refer to our mission: the protection of the night sky.

And while many destinations are facing so many problems and low demand, our territory is going through an increase in demand, showing that the best strategy is the one that leads us to the way of sustainability. Sustainability is no longer a vague and remote concept with no added value, but something that creates better destinations, that are more adaptable and resilient to rapid and drastic changes, just like the ones we are currently facing.



DHAFRA REGION MUNICIPALITY

AL DHAFRA FORESTS

AIM

The project includes operation, maintenance and development works in the field of forests in the Al Dhafra region, where the total area of forests in the Al Dhafra region is 12,1847.845 hectares, and the cultivated area is 35,954,011 hectares distributed over 231 forests, and the percentage of Al Dhafra forests is 63% of the total forests of the Emirate of Abu Dhabi

Many forests were planted within the framework of the program to combat desertification launched by the late Sheikh Zayed bin Sultan Al Nahyan, and this program was designed to improve the quality of life of those living in the emirate, as well as protect infrastructure and provide habitats for wild animals. Some forest sites are also prepared for educational and training use for community students by preparing visits to schools and involving them in the work of spreading wild seeds inside the reserves and enjoying the wildlife within the forest

Environmental benefits include a reduced carbon footprint and natural wildlife development. The municipality achieved self-sufficiency in the production of fruit and dates

IN DETAIL

Project name: Al Dhafra Forests

What the project includes?

The project includes operation, maintenance and development works in the field of forests in the Al Dhafra region, where the total area of forests in the Al Dhafra region is 12,1847.845 hectares, and the cultivated area is 35,954,011 hectares distributed over 231 forests, and the percentage of Al Dhafra forests is 63% of the total forests of the Emirate of Abu Dhabi

The project includes preparing a safe haven for many wild animals such as deer and various birds. The project includes the multiplication of local wild plants according to the region after collecting the seeds and planting them in the empty lands in the desert between the borders of the forests and within the reserves, which depend on atmospheric humidity and seasonal rains for growth, which contributes to greening the desert at a very simple cost and does not require maintenance

Why this project was done?

Many forests were planted within the framework of the program to combat desertification launched by the late Sheikh Zayed bin Sultan Al Nahyan, and this program was designed to improve the quality of life of those living in the emirate, as well as protect infrastructure and provide habitats for wild animals. Some forest sites are also prepared for educational and training use for community students by preparing visits to

| مستلزمات البساتين (تقريباً) | الإجمالي | أشجار النخيل | أشجار الغاف | الزواجر | الاستثمار في البساتين |
|-----------------------------|---------------|---------------|---------------|----------------|-----------------------|
| 7,534,000,004 | 8,475,100,000 | 1,740,000,000 | 6,735,100,000 | الزواجر | الاستثمار في البساتين |
| 8,340,884,792 | 9,475,100,000 | 1,740,000,000 | 7,735,100,000 | زواجر البساتين | الاستثمار في البساتين |
| 5,452,883,908 | 6,475,100,000 | 1,740,000,000 | 4,735,100,000 | زواجر البساتين | الاستثمار في البساتين |



schools and involving them in the work of spreading wild seeds inside the reserves and enjoying the wildlife within the forest.

How much did it cost and where did it come from?

Because forests are planted, their sustainability depends on human intervention, and this represents a great financial burden on the government to meet the needs of operation and maintenance

What did the project achieve?

The project has had a direct impact on the climate, as forests help maintain and improve the climatic balance, as the capacity of one tree to store approximately 48 pounds of carbon dioxide during one year and plays a key role in producing oxygen, purifying water and enhancing biodiversity, as it contributes to forming a habitat for large numbers of living organisms. Forests help protect and stabilize soils from erosion and erosion and contribute to air purification by absorbing carbon monoxide, sulfur dioxide and nitrogen dioxide. The project provides a food source for humans and animals from the production of palm trees in the belts and forests.

Beneficiaries and benefits accruing to them:

The state and the local community benefit by combating desertification and protecting infrastructure, as forests and belts form the first line of defense for the encroachment of sand on the cities and nearby areas. Some forest sites are also prepared for educational and training use for community students by preparing visits to schools and involving them in the work of spreading wild seeds inside the reserves and enjoying the wildlife inside The forest is also benefited from the production of dates found in the forests and distributed to the local community and to charitable organizations

Long term benefits:

Environmental benefits include a reduced carbon footprint and natural wildlife development. The municipality achieved self-sufficiency in the production of dates and dates

Innovation about the project:

Develop operating methods to reduce the carbon footprint and benefit from operating outputs by recycling them Some assets have been developed to reduce the carbon footprint in the forests, where the well machines have been replaced by submersible generators that have less operating hours and less carbon emissions. The use of solar energy has been relied as much as possible to operate some wells, and alternative irrigation sources have been started from wastewater. Treated sewage as a means to stop the depletion of groundwater, which is one of the biggest negatives of establishing forests and stopping the use of machines operating on fuel. Work is underway to study and connect a large number of belts and forests with treated wastewater

Wild Plant Seeds

Germination of seeds from previous seasons



in coordination between the municipality, Abu Dhabi Distribution Company and the Environment Agency.

Recycle of agricultural waste is collected, recycled and utilized for several uses, including fertilizers and soil conditioners, and used in the natural beautification of gardens, in addition to firewood. Can other organizations and communities benefit from implementing your methods: Yes, this can be done, especially in the field of combating desertification

Forests and climate Forests help maintain and improve the climatic balance. The capacity of one tree to store approximately 48 pounds of carbon dioxide per year. It plays a key role in producing oxygen, purifying water and enhancing biodiversity, as it contributes to the formation of a habitat for large numbers of living organisms. Forests help protect and stabilize soils from erosion and erosion and contribute to air purification by absorbing carbon monoxide, sulfur dioxide and nitrogen dioxide.

The project of replacing water-consuming plants with non-water-consuming plants:

An introduction : The Al Dhafra region is located within the hot desert climate characterized by the lack of rain. Therefore, the teams of park administrations in the six cities have sought to reduce as much as possible the consumption of irrigation water, by replacing the plants that consume irrigation water with alternative plants that do not consume water while maintaining the green patch in the region . Project Brief: Focusing on gradually replacing as many green grass plants as possible, which consumes an average of 12 liters per square meter to survive and grow in an acceptable manner, has been replaced by alternative plants that consume only 30% of the mentioned amount of water. Replacing an area of at least 117,800 square meters of green grass, thus saving very large amounts of water daily while maintaining the green area at the same time.

Environmental impacts of the project:

- 1- Reducing the consumption of irrigation water.
- 2- Preserving the green patch in the area, thus absorbing carbon dioxide and releasing oxygen gas and positively contributing to the carbon footprint
- 3- Combating desertification

What did the project achieve?

A quantity of irrigation water estimated at 942,400 liters of water was provided per day, thus preserving the water stock for future generations and saving in the consumption of precious and rare irrigation water in such a desert area.

Can other organizations and communities benefit from implementing your methods:

Yes, this is possible, especially in the field of combating desertification and reducing the negative effects of carbon emissions

Innovations in the project

- 1- A quantity of irrigation water estimated at 70% (942,400) of consumption compared to the previous case was saved
- 2- Preserving the green areas and not affecting or reducing the green areas

Automatic irrigation station project: 350

First - The project aims to provide a sophisticated pumping station for irrigation water that is controlled through electronic programs, feeding a network of advanced irrigation lines covering approximately 60% of Ghayathi city as a first stage. The project is civil, mechanical and electrical works for an irrigation water tank in Ghayathi city, including irrigation lines and valves works, summarized in the following works:

Establishing about 18 km of main irrigation lines, and a total network of 33 km with different diameters ranging from 150 mm to 450 mm, including manholes and valves.

Establishment of a water tank with a capacity of 10,000 cubic meters with all requirements

Installing an automatic irrigation network that works by remote control system with control rooms, 54 inspection rooms, 507 automatic valves, in addition to a meteorological station

Second - The reservoir is fed by main water lines from groundwater wells with a length of up to 35 km.

Third - Irrigation water is distributed through the irrigation network connected to the plant with a length of up to 33 km and feeds approximately 60% of the cultivated area in the city and includes mainly the following:

The main street of the city

Ghayathi Park

Fourth - Irrigation is controlled through an automatic control system through which pressure is maintained within the network regardless of the irrigation schedule of agricultural areas, through the use of (3) pumps and one more in a backup mode that operates when needed

The main element in the network is the pressure maintenance system, which is installed in the drain line, which measures the net discharge quantity. The operator employee chooses the pressure through the pressure switch located in the control panel, and then the system determines the pump speed, the number of pumps that must be operated to maintain the required pressure, and the quantity Water required

The latest technological means were used in the pumping station in order to make optimal use of the water, as the number of operating pumps is determined according to the needs of the site and the information received from the meteorological station. The control panel and the central irrigation device are interconnected to increase efficiency The project's new network was designed and constructed to meet the need for green spaces in Ghayathi city (first phase) and the city's green belt. 507 remote control valves were installed with 28 on-site control panels to serve the automatic irrigation works. Each control valve determines the amount of water and irrigates the area for which it is responsible. It is connected with an electric wire to an on-site control panel, which in turn is programmed and connected to the remote control room, which controls the entire irrigation system with the help of the on-site meteorological station

Agricultural waste grinding



The outputs of operation and maintenance work for forest trees and palm trees such as dry branches and dry palm fronds

The agricultural residues are ground to take advantage of the product to improve the properties of the soil, especially the sabkhat area .



Ghaf seeds + fodder dates + green residue + palm fronds are collected and silage is used to feed wild animals and sheep .

The amount of waste reached 12,300 tons for the year 2020

EBSFORD ENVIRONMENTAL ENVIROSCREEN 2020

AIM

Japanese knotweed is proscribed under the Wildlife and Countryside Act 1981 (as amended 2010) as it poses significant risk to biodiversity, infrastructure and the built environment.

Regenerating from tiny fragments, spreading very easily, stringent biosecurity protocols are required during its management.

Under the Environmental Protection Act 1990 materials affected are classified as Controlled Waste for offsite disposal purposes which can be expensive particularly when combined with other contaminants.

Enviroscreen20-20TM bespoke mobile processing system, created and developed by Ebsford over 8 years, is a complex sorting solution which removes the plants viability from host soils facilitating their reuse on site.

The system is versatile, accommodating management of other waste streams including bonded asbestos, plastic, wood & metal, which can

be separated for targeted disposal or recycling.

Enviroscreen20-20TM was developed with the aim of challenging the mass disposal of soils to landfill mentality offering the industry a sound alternative, reducing haulage vehicle movements, maintaining landfill capacity, reducing projects carbon foot prints and limiting community impacts with the goal of providing a client with a clean site for future development in a cost effective and sustainable manner.

ACHIEVEMENTS

56 Enviroscreen projects completed since 2012.

65,049 cube Japanese knotweed contaminated materials processed.

117,000 ton diverted from landfill for recycling and reuse on site eliminating around 5,850 haulage movements and the resultant CO₂ generated.

Client spend of £2,738,164 excl. VAT, an average 50% saving against disposal to landfill.

Offsetable against corporation tax offering further savings.

Acceptable under BREEAM and waste reuse criteria for new developments.

All projects supported by industry leading Warranty packages including Ebsford PI and IBG's from industry trade bodies The PCA and INNSA.

Through extensive negotiations screening was incorporated into



the original Code of Practice for Japanese knotweed as written by the Environment Agency as an acceptable remedial solution.

Our solution has been so popular we were able to fund a second larger bespoke unit 'Serena' offering increased processing capability or dual setup to optimise working time.

Little Cryfields was recognised at the 2019 PCA Best Practice Awards with Highly Commended Project of the year, with Ebsford winning Large Contractor of the Year.

Enviroscreens environmental contribution was recognised at the 2018 BSG awards, where it was Highly Commended within its category.

Recent adaptations include extended conveyors and operative bubbles to keep two major infrastructure schemes operational during Covid.

IN DETAIL

Little Cryfields

Little Cryfields is a suburban, 1.4ha residential development site on the quiet outskirts of Coventry. The site was largely overgrown with bramble, with a perimeter graduated scrub edge supporting a significant reptile population and two established Badger setts. One corner of the site housed a dry lake, which over the years had been subject to infilling through unsolicited fly tipping.

On initial survey we could see that the Japanese knotweed was significantly more extensive than the client had initially understood due to its previous herbicidal management which masked the plants full extent, with the species presenting in a bonsai growth form and untreated foliage concealed within dense scrub.

During the design phase, close liaison with the overseeing ecologists was required to tie our

Japanese knotweed remedial scheme in with the badger relocation project and reptile mitigation works. We were able to sensitively phase our works with areas of the site which has been cleared of protected species, whilst safeguarding retained habitat through careful site set up and management.

Significant contamination of fill materials in which the Japanese knotweed was established were highlighted through the clients initial phase ground investigation works.

Second and third phase trial pitting and testing were then undertaken by Ebsford to explore and understand the levels and types of materials present and depth contour map to calculate anticipated contaminated volumes and provide a cost benefit analysis allowing the client to make an informed decision on the type of remedial scheme to be



employed, time required to complete and associated costs so that they were fully informed of the possible worst case scenario and likely final costs for the scheme. Part of these works included a feasibility assessment to ensure that the host soils would be suitable for reuse on site in partnership with the clients engineer.

The initial phase of the works included the identification, segregation, and disposal of the hot spots of licensable asbestos by our licensed contractor under a notification to HSE. This included supporting our client with a neighbourhood notification and liaison with the local community in order to limit any distress caused and allay any concerns of residents by the required health and safety protocols required for this element of works.

The second phase of works saw contaminated soils systematically excavated to the undulating virgin ground, what would have historically been the base of the lake. Materials were stockpiled for loading into the screener to ensure a constant feed to maintain the equipment's productivity. At this stage hazardous items such as gas cylinders and tyres were separated as were larger recyclable metals – including several motorbikes and part of an aeroplane.

Phase three is where the key separation takes place. The plant comprises three agitating decks which shake the host soils, separating them into three fractions. Fines, which resemble topsoil, a mid and oversize containing the organics, bonded asbestos, small landfill items, block and stone.

These fractions feed down onto separate conveyors which are attended by staff trained to remove the specific waste stream. Separated items go into designated bags or appropriate storage on site and loading shovels and dumpers then move the host materials arising from each belt and place them into separate holding pens where they remain until site is ready to reuse them in line with the materials management plan.

Real time progress on site was available to the client through shared photo streaming where site photographs and the daily site diary were available to view. Costs and budget were real time tracked by our contracts management team, with weekly summary briefings on progress and budget communicated to the client team by the dedicated Ebsford project manager and Principle Consultant so that early warning risks could be identified and addressed to prevent unexpected costs. This made



Enviroscreen
Maxi – 'Serena'

Our newest maxi unit,
economic for processing
volumes over 1000m³.

3501 Forder Valley

for a smoother project process and complete transparency resulting in a happy client. Costs for off site disposal of items were validated through weigh bridge tickets for the waste streams leaving site for disposal or recycling and completion reporting to demonstrate compliance with best practice guidance and current legislation. The project was backed by an internal PI and industry leading IBG.

Offsite disposal was calculated to be in the region of a £1 million, which would have rendered the development infeasible for the client. The Enviroscreen 20-20TM project was delivered £210,000.

The project was client funded, however the qualification of the solution for government funded Land Remediation Tax Relief enabled some costs incurred to be reclaimed, by the client, via relief from Corporation tax. High quality completion and compliance reporting provided by Ebsford formed the supporting documentation for the claim.

In Summary -

- 6000m3 of host materials were retained and usefully reused on site eliminating around 10,800 ton to landfill and about 550 lorry movements, plus removing any requirement to import backfill.
- Organics removed and incinerated on site using our mobile burner under exemption.
- 3700kg bonded asbestos handpicked by licensed consultants, only raw material requiring disposal.
- 151 Tyres, wood, and metals were separated and recycled where possible.
- 105 tonne general waste to landfill.

The route between site and the landfill which would have received the Japanese knotweed contaminated materials is 39 miles, a round journey for each lorry of 78 miles.

This would equate to around 42,900 miles producing around 723,398kg CO2 which has been displaced by Enviroscreen. This doesn't account for machine time on the landfill for onward materials management involved with the required burial at depth.

In comparison, the Cryfields project used a total of 2500 litres over 9 weeks, equating to around 6,700kg CO2.

A diversion of around 716,698kg CO2.

ECOSERV GROUP

REDUCING ENVIRONMENTAL IMPACT & ACHIEVING NET ZERO

AIM

Ecoserv is engaged in measuring, monitoring and reducing our carbon footprint throughout the business.

We are targeting continuous improvement as part of our growth strategy, with regular sustainability reviews that allow us to update our objectives.



In the past three years these have included:

- Minimising the environmental impact of the central operation
- Lowering the emissions emitted from the company's car and van fleet
- Utilising cleaning products that reduce supply chain miles and remove packaging
- Adopting operational systems that can replace existing paper-based processes
- Effectively measuring and monitoring the sustainability of the business

We have explored and implemented (or are implementing) a range of initiatives that are already contributing or will contribute to dramatically reducing the environmental impact of the business both centrally and across the business. To complement our ongoing objectives, Ecoserv has this year introduced a roadmap to lock the business into a range of environmental and social sustainability targets.

We have also engaged environmental consultancy, RSK, to help us set science-based targets to go beyond carbon neutral and achieve net zero which we know is the only credible response to the climate change emergency.

ACHIEVEMENTS

Achievements to date:

- Ecoserv's Head Office moved to Howbery Park, a sustainable 70-acre estate that is the UK's first solar-powered business park with a zero to landfill waste policy.
- Our head office is now paperless, reducing waste by over 90% following the introduction of new electronic systems.
- We have committed to operating a fully electric fleet.

To date, 50% of the executive team already drive electric, with the remainder awaiting delivery. Our local operations are also switching to electric vans where local infrastructure permits.

- We implemented an initiative to lower the carbon emissions resulting from delivery of materials to customer locations. Steps taken have reduced deliveries by 10%, which if maintained across the year, are forecast to achieve an annual reduction of 2,271kg of CO₂e.
- Innovative technology like washable microfibre mopheads and cloths have helped to save 17 million litres of water annually.

We also take advantage of the latest eco-efficient vacuuming technology that achieves a 30% reduction in energy consumption.

- A multi-purpose cleaning product that replaces four conventional product solutions. We have calculated that using this 100% eco-friendly option has reduced plastic waste and transport-related packaging by 75%.

IN DETAIL

Ecoserv Group (formerly Ecocleen Services) is passionate about the environment.

As an eco-engaged business with a green heritage, we are committed to being sustainable in the communities we operate, so are always seeking ways to reduce waste and minimise our carbon footprint.

“When it comes to fighting climate change urgent engagement is needed now. Ecoserv have been eco-conscious since 1993 and will continue to build on our legacy leading the way to help our customers achieve the change that is needed, and needed urgently.” Jean Henri Beukes, Chief Executive Officer, Ecoserv Group

Ecoserv is engaged in measuring, monitoring and reducing our carbon footprint throughout the business. We are targeting continuous improvement as part of our growth strategy, with regular

sustainability reviews that allow us to update our objectives.

In the past three years these have included:

- Minimising the environmental impact of the central operation
- Lowering the emissions emitted from the company's car and van fleet
- Utilising cleaning products that reduce supply chain miles and remove packaging
- Adopting operational systems that can replace existing paper-based processes
- Effectively measuring and monitoring the sustainability of the business

Engagement

We work with our customers, supporting and consulting with them on sustainability. Using nature-based products, water-saving equipment, continuous service improvements and innovation, we can reduce the environmental impact of a typical cleaning operation by up to 30%.

We also recognise the amount of change that still needs to be made, so we focus on partnering with like-minded organisations.

For example, we have been involved with one of our schools in Marlow to help them arrange a conference on sustainability and engage with the pupils about effective recycling and waste management.

Initiatives

We have explored and implemented (or are implementing) a range of initiatives that are already contributing or will contribute to dramatically reducing the environmental impact of the business both centrally and across the business. Head Office Ecoserv's National Head Office moved to Howbery

Park in 2018, a sustainable 70-acre estate that is the UK's first solar-powered business park with a zero to landfill waste policy.

This is underpinning our commitment to making our central operation more sustainable and responsible. In particular, the adjacent ground-mounted solar array, made up of 3,000 panels connected to the National Grid, generates around 25% of the Park's electricity requirements and equates to a saving of almost 350,000kg of CO2 emissions.

Paperless Working Using IT systems and innovative processes Ecoserv's head office is now paperless (unless legislative requirements dictate otherwise) reducing waste by over 90%.

We have introduced new electronic systems for auditing, onboarding of staff, time and attendance have removed paper usage, while contributing to improved planning of site visits that has reduced unnecessary mileage.

We have also engaged with a leading software developer to create a bespoke workforce management system that will replace further paper-based processes and help minimise waste across our operation.

Fleet Ecoserv has committed to operating a fully electric fleet. Our vehicle policy states that any future vehicle procurement must be electric to ensure we are well ahead of the 2030 UK government targets.

To date, 50% of the executive team already drive electric, with the remainder awaiting delivery. Our local operations are also switching to electric vans where local infrastructure is available.

Most recently, three new vans are now in operation at the Warner Brother Studio site in Hertfordshire.

Deliveries In 2021, we implemented an initiative to lower the carbon emissions that resulted from the delivery of materials to customer locations.

Following a thorough review of our local operations, we took steps that have helped reduce deliveries by 10%:

- Educated operations on the negative impact frequent and small deliveries
- Set a target of 80% of deliveries having a cash value of at least £35
- Added automated measurement of compliance and added to operations KPIs
- Reviewed performance weekly and monthly
If maintained across the year, we are forecast to achieve an annual reduction across our UK group of 2,271kg of CO2e, which is equivalent to 5,677 miles driven in an average passenger vehicle.

Equipment & Products

Ecoserv use equipment and products that are biological, cruelty-free, planet conscious and people-friendly and, above all, effective.

Innovative technology like washable microfibre mopheads and cloths have helped us to save 17 million litres of water annually and use less laundering materials. We partner with Numatic for vacuuming technology, so we can take advantage of the latest eco-efficient model that achieves a 30% reduction in energy consumption.

We also identified and rolled-out a multi-purpose cleaning product that replaces four conventional product solutions – odour eliminators, multi-surface cleaners, carpet shampoos and spot cleaners, air fresheners and polishes.

We have calculated that using this 100% eco-friendly option has reduced plastic waste and transport-related packaging by 75%.

Waste Management

Our strategy for waste removal is built on the waste hierarchy of the three R's: Reduce, Reuse and Recycle.

This prioritises the reduction and reusing/repurposing of waste before considering the recycling route, which represents the least efficient option above landfill due to the added financial and energy cost required.

We use this framework across our offices, operations and supply chains.

Roadmap

To complement our ongoing objectives, Ecoserv has this year introduced a roadmap to lock the business into a range of environmental and social sustainability targets.

These include: 2022

- Paperless at head office and across in-house operation

- First cleaning company to join Science Based Targets initiative (SBTi) and become BCorp accredited
- Supply chains 100% cradle-to-cradle commitment for equipment, products and ethical social commitment 2023
- Zero waste to landfill from head office and throughout operations
- 100% renewable energy sources
- 100% renewable energy vehicles (90% electric and 10% hybrid) 2030
- Carbon neutral through emissions and offsetting 2050
- Carbon neutral without offsetting

However, we have since engaged environmental consultancy, RSK, to determine our exact carbon footprint and validate any existing assessments. This will enable us to set specific, measurable, achievable, realistic and timely (SMART) emission reduction targets and develop an effective strategy to achieve them.



EFFICIENT SERVICE DELIVERY (ESD)

LOCH NESS REGIONAL

AIM

The Loch Ness Regional Project is to improve and ensure future resilience of water quality through addressing the Trihalomethanes (THM) and Cryptosporidium risk at Invermoriston and Fort Augustus WTW's through construction of new water intake in Loch Ness, 15km pipeline and water treatment works. The project is being delivered for Scottish Water by the alliance delivery partner (Efficient Service Delivery) a joint venture between Black & Veatch, Galliford Try and MWH Treatment.

To promote sustainable development, the final route alignment for the new main route alignment, positioning of new works and works in and around Fort Augustus was selected following extensive discussions and engagement with landowners and statutory consultees (Highland Council, SEPA, Scottish Canals and Ness fisheries) and environmental specialists to minimise disturbance to endangered species, sensitive habitat (minimise tree felling and ground disturbance) and undertaken as much as possible outside holiday season to reduce impact to the Great Glen Way (GGW). The route through the forest was directed in such a way

that the trees in and surrounding the construction areas were individually surveyed and plotted. This survey was overlaid onto construction drawings and only trees directly conflicting with the water main alignment footprint were removed.

ACHIEVEMENTS

Design and construction planning allowed for the mitigation of extensive environmental sensitives.

At the Raw Water Intake (RWI) into Loch Ness, timing restrictions due to fish migration in the River Morriston SAC meant that works not only had to be completed in tight window of June-September, but mitigated risk. Floating silt curtains and oil booms on the loch and silt fencing on land, prevented risk, resulting in no pollution incidents. Works were completed within the allotted time frame.

Most of the works was in ancient forest woodland, providing habitat for the UK's most protected species including birds, bats, red squirrels and pine martens. Engaging specialists and surveys over a period of 10 years prior to scheme start and early within the programme avoided significant



disturbance and minimised tree clearance. Any trees removed were recycled on site to form habitats.

Community engagement with residents and businesses was essential. The programme was adjusted and works completed outside high-peak tourist season. Over 3,500 pieces of correspondence were sent to the community and noticeboards were erected informing walkers of phasing and route closures on the GGW. A shuttle minibus was provided on the closed sections to transport walkers during works.

IN DETAIL

What did the project involve doing and why did you do it?

- RWI and pumping station at Loch Ness, near Invermoriston
- A new raw water rising main to the new WTW.
- A new 1ML 3 stream nano-filtration WTW and new clear water tank constructed just south of Invermoriston,
- Pumped main from the new WTW in Invermoriston to a new Service Reservoir located above Fort Augustus
- Gravity main to Fort Augustus from the new SR.
- New pipeline crossing beneath the Caledonian Canal and River Oich
- Network improvements in Fort Augustus (flow meters; pressure reducing valves; and cross-connections)
- Slip lining of approximately 4km of existing gravity main and installation of two new booster pumping stations



During winter 2018/2019, works commenced along the GGW to install approximately 10km of new water mains through which treated water will be pumped to the SRs at Fort Augustus and Invermoriston and construction commenced on the new WTW site to prepare for delivery of the new plant (simultaneously being manufactured and commissioned off-site).

The new RWI at Invermoriston and the new SR at Fort Augustus both started construction Spring 2019. Completion in early 2020. By summer 2020, the new advanced WTW will be constructed south of Invermoriston to provide both communities with a high quality and resilient supply of clear, fresh drinking water from Loch Ness to around 1,250 customers in Fort Augustus and Glenmoriston and meeting demands of peak tourist season.

What did it cost and where did the money come from?

The project value is £21m, part of the larger Scottish Water SR15 investment.

If quantifiable, what did the project achieve in terms of sustainable development, economy and /or equity?

A key efficiency lever is our carbon footprint, maximising sustainable construction and protecting our natural heritage within our programme. This was achieved through minimising land take, route alignment, pollution prevention controls and increasing awareness of project team and supply chain through in house environmental training by ESD Environmental Team. We minimised the export of spoil from site, with suitable excavated materials being used as structural fill. Reducing construction traffic was a key topic raised during community events prior to commencement. The local community relationship has been positive throughout and regular updates have been sent to the community council and meetings attended.

What and who benefited?

The new drilled river and canal crossing in Fort Augustus is a key link in the village's water network, providing a significant improvement to the security of supply for SW customers.

Fort Augustus and Glenmoriston experience significant seasonal population variations from tourism. This investment will ensure that customers are served with clean, fresh and great-tasting water, supporting growth in the communities and economic development in the heart of the Great Glen, with lasting benefits to communities and the economy that sustains them.

Ecology benefited by:

- New raw water rising main followed an existing pipeline wayleave within woodlands and along GGW. The new WTW was in an existing clearing within the forest
- The existing WTW at Invermoriston is being re-used for additional capacity rather than constructing a new tank
- Slip lining to the south-east of Fort Augustus prevents significant excavation work within the B862 and surrounding land.

Longer term benefits

To meet the long-term water needs of the area, a new works was required. Resilient by design, the treatment works produces more water, more efficiently and at a lower cost than traditional methods.

Was there anything innovative about the project?

Well pointing was used to remove water from the ground next to Loch Ness where the new 5m shaft was sunk for the RWI, eliminating the requirement for dewatering within the excavation, and pollution risks. The resulting water treated via settlement tank prior to discharging into Loch Ness. Silt fences were installed, no pollution incidents occurred.

We visited Kilchuimen Academy in Fort Augustus and discussed the project with local pupils, STEM subjects and engineering as a career. Pupils tested out their engineering skills with a bridge building activity and reusable water bottles were donated to the school, encouraging sustainability in the classroom and reducing the use of plastic - a great way to engage with the communities we are working in.

The local MSP previewed the new state of the art WTW which was manufactured by Ross-shire Engineering (RSE) utilising DfMA (Design for Manufacture and Assembly) at its specialised facility in Muir of Ord. RSE are using an innovative approach which enables sophisticated modern water treatment equipment to be assembled and pre-commissioned in factory conditions, before being broken down into large modules and transported for reassembly and final commissioning at their long-term home. This cutting-edge work taking place in the Highlands involves precision engineering carried out by a highly skilled team and the use of DfMA means less plant equipment is required on site, less wastage and helps to overcome the challenge of working within a constrained location. This award-winning approach has been developed via a partnership with SW and is worth approximately £40m pa.

This impressive new WTW will play a crucial role in serving customers in Fort Augustus and Glenmoriston, as well as supporting the area's thriving tourism sector. ESD is committed to helping SW deliver the same high standard of service to their customers for the same low price, no matter where they live. That cannot be achieved without innovating in response to the varying challenges that are faced in different parts of the country.

Continuing and evolving key supply chain partnerships are also helping to lower the significant financial and carbon costs of serving rural communities and delivers long term benefits for customers in the Highlands and beyond. This project

for the Great Glen is an example of the innovative approach to water treatment and the environmental and economic benefits that it can deliver.

The crossing beneath the Caledonian Canal and the River Oich (approximately 300m) is being carried out by a combination of air hammer driven auger bore and horizontal directional drilling to eliminate any impact on these watercourses.

Can other organisations / communities benefit from implementing your methods?

The offsite manufacturing process is a valuable long-term contribution to both local economies, but the benefits are not just local, with Highland expertise already being used nationally.

What did you learn from the project and are you planning any further developments?

Traffic management minimised disturbance to the community. We will continue to work actively with the community for future works responding to any issues and deliver the lasting benefits of this project.

Please also be sure to provide details of any relevant accreditation or awards gained?

Stakeholders feedback (Highland Council, Walking Groups).

SW Internal customer engagement award.

ELLENDALE ENVIRONMENTAL SENNYBRIDGE PRIMARY SCHOOL WOODLAND ENHANCEMENT

AIM

Balfour Beatty are working with National Grid to upgrade the overhead line power network in South Wales. Some of the work is in the Brecon Beacons National Park so we decided to seek a community outreach project within the park to give back to the community.

Sennybridge Primary School is within the Brecon Beacons National Park. We were contacted by Brecon Beacons National Park as part of our community outreach programme. The school has a woodland area that was being used by dog walkers and as such wasn't a pleasant place for the children to spend time in. The children at the school sent posters to Balfour Beatty requesting our help.

We have a lovely Pond but
it is so dirty. The frogs
have nowhere to swim.



ACHIEVEMENTS

Pond restoration, installation of new boardwalk and pond dipping area

Fencing of woodland to prevent dog walkers entering school woodlands and to provide safe outdoor space for children

Bird box, bat box and hedgehog home installation

Creation of multi-access pathway through woodland to enable pushchairs and wheelchairs access to the woodland areas

Purchase and installation of garden shed to use as wildlife hide and education area within the woodland

Purchase of wildlife equipment – bug viewers, pond dipping equipment, nest boxes

Wildlife talks to the children throughout the process and during school assembly after the event

IN DETAIL

Both Balfour Beatty and National Grid are committed to providing help to local community projects. Sennybridge School was a good fit for this as they needed help and were a small school that would otherwise not have got much help or attention.

Several months of planning was required to get everything in place for the volunteer day with Andrew Whitelee (Ellendale Environmental) acting as school liaison and Dan Dennis (Balfour Beatty) working out the logistics of the day. In the days leading up to the event visits were made to the school to plan how the day would work and to ensure both the safety and engagement of the children during the works.

The overall material cost of the project was around £8000 which was paid for by Balfour Beatty with plant and equipment usage provided by D&C Groundtec who are a sub-contractor. Ellendale Environmental spent £500 on nest boxes, bat boxes, hedgehog house and other learning materials. The labour costs are estimated at around £10000 which includes volunteering on site during the works, pre-works planning by Environmental Advisor and Site Manager and school liaison work before, during



Site Visit and approval from the Eco-Council and Miss Watts, Headmistress

and after the event. Additional labour provided by Prince's Trust Volunteers working under supervision of Brecon Beacons National Park ranger.

The woodland is in a better place to be utilised by the school now and provides a safe outdoor learning space for the children. The pond which had become derelict and full of rubbish and leaf litter is now better able to support aquatic flora and fauna. The additional of nesting boxes for birds and roost boxes for bats adds to the biodiversity of the woodland.



Fencing around the woodland provides a safe area for the children and deters dog owners from allowing their dogs to use the area.

During the work, the school children were allowed to visit the work and ask the team questions about what we were doing and why it was a good thing to do. We have plans to revisit the school and carry out further educational talks in the future. This work is on hold for this year due to the COVID 19 lockdown. Andrew Whitelee, the Environmental Advisor working on behalf of Balfour Beatty is a STEM Ambassador and will carry out educational tasks with the school once the situation allows.

The volunteer day gave the Prince's Trust volunteers an opportunity to work alongside people from industry and gain experience and insight into the world of construction work. The Prince's Trust volunteers then had a follow up visit to the Balfour Beatty construction site and a guided tour of a tower upgrade to experience a day in the life of a Balfour site worker.

The longer-term benefits are to hopefully provide the school and its children with a resource where they can experience nature, engage with wildlife and form a bond with it so they care about it later in life. The Prince's Trust volunteers gained an insight into the working environment.

The general consensus from the volunteers who took part was that community engagement work is a rewarding experience. The post-COVID plan will be to carry out additional community engagement work in the local community on all future works. Other

Balfour Beatty projects across the country are also planning to carry out community engagement works as part of their sustainability initiatives.

ENERGISE RFU ENERGY SAVING PROGRAMME

AIM

The varied type of operations that most clubs have means that although energy use is relatively small, when the buildings are in use, they are typically energy intensive in their operation. The intensity typically comes from the large amount of hot water capacity, inefficient lighting internally and externally, and poor control of heating and small power equipment.

With clubs being mostly self-funded through subscriptions from our members, reducing expenditure allows for reinvestment in better facilities and training. As energy is one of the highest operational costs we have, reducing it is key.

ACHIEVEMENTS

Across the 25 clubs involved in this recent round of energy surveys, Energise identified a total annual energy reduction of 476MWh or £42,500

with an average payback of 2.46 years. The recommendations included LED replacements, cellar management technologies, improved heating controls and air-source heat pump retrofits.

In addition, renewable feasibilities were conducted as part of the surveys and a total renewable generation of 145MWh or savings of £20,000 was identified. All recommendations made were for solar PV however it is likely that other sites will be able to take advantage of other renewable technologies based on the outcomes identified.

IN DETAIL

The RFU created an Energy Club in 2016 which collated offers, initiatives and advice provided by the RFU and third-party partners for the use of local RFU clubs. This includes Energy Nights, energy surveys, energy procurement assistance and finance options for higher cost installs.

| RFU Area 4 Surveys Recommendation Summary | | | | | | | | |
|---|-------------------|-----------------------|----------------------|-------------|-------------------|-----------------------|----------------------|--------------|
| Site Name | REDUCE | | | | RENEW | | | |
| | Annual kWh Saving | Total Cost Saving (£) | Project Cost (Total) | Payback | Annual kWh Saving | Total Cost Saving (£) | Project Cost (Total) | Payback |
| RFU Broadstreet Rugby Club | 17,713 | £ 3,339.96 | £ 3,807.00 | 2.14 | | | | |
| RFU Earsdon | 27,466 | £ 2,878.00 | £ 4,438.00 | 1.54 | | | | |
| RFU Henckley Rugby Club | 12,428 | £ 901.00 | £ 3,355.00 | 3.46 | | | | |
| RFU Market Harborough | 42,519 | £ 3,009.00 | £ 11,735.00 | 3.91 | | | | |
| RFU Nottingham Casuals | 5,320 | £ 675.00 | £ 5,736.00 | 8.56 | | | | |
| RFU Nottingham Moderns | 7,567 | £ 3,008.00 | £ 3,127.00 | 3.07 | 8,979 | £ 1,307.00 | £ 14,597.00 | 12.09 |
| RFU Old Coventrians | 13,192 | £ 3,241.00 | £ 3,272.00 | 2.64 | | | | |
| RFU - Brackley | 17,676 | £ 2,128.00 | £ 2,043.00 | 0.96 | 14,728 | £ 2,023.00 | £ 41,858.00 | 20.79 |
| RFU - Olney Rugby Club | 6,966 | £ 790.00 | £ 2,236.00 | 3.19 | | | | |
| RFU Chesterfield Panthers | 45,032 | £ 3,292.00 | £ 4,823.00 | 1.49 | | | | |
| RFU Derby | 28,354 | £ 3,828.00 | £ 5,196.00 | 2.84 | | | | |
| RFU Paviors RFC | 13,840 | £ 3,578.00 | £ 9,204.00 | 5.83 | | | | |
| RFU Pinley | 17,519 | £ 3,084.00 | £ 4,306.00 | 3.97 | | | | |
| RFU Stoke Old Boys | 20,774 | £ 3,648.00 | £ 6,972.00 | 4.73 | | | | |
| RFU Sutton Coldfield Rugby Club | 48,413 | £ 3,457.00 | £ 5,048.00 | 1.46 | | | | |
| RFU - Cambridge | 26,484 | £ 2,525.00 | £ 2,386.00 | 0.91 | 18,410 | £ 2,556.00 | £ 52,300.00 | 20.75 |
| RFU - Dunstable | 10,814 | £ 3,478.00 | £ 2,143.00 | 1.40 | | | | |
| RFU - Epsomham | 6,300 | £ 3,025.00 | £ 2,366.00 | 2.31 | | | | |
| RFU - Leighton Buzzard | 20,202 | £ 2,139.00 | £ 2,238.00 | 1.05 | 28,184 | £ 3,852.00 | £ 65,006.00 | 17.91 |
| RFU - Long Buckby Rugby Football Club | 2,732 | £ 91.00 | £ 618.00 | 6.70 | | | | |
| RFU - Northampton Casuals | 14,019 | £ 3,505.00 | £ 2,678.00 | 1.40 | | | | |
| RFU - St Neots | 16,452 | £ 3,438.00 | £ 3,242.00 | 2.25 | 44,903 | £ 6,137.00 | £ 114,658.00 | 18.68 |
| RFU - Stowmarket | 11,231 | £ 3,437.00 | £ 1,947.00 | 1.35 | 30,520 | £ 4,175.00 | £ 60,800.00 | 14.58 |
| RFU Grimsby | 19,180 | £ 3,784.00 | £ 5,605.00 | 3.14 | | | | |
| RFU Ketterley | 21,899 | £ 3,817.00 | £ 6,085.00 | 3.25 | | | | |
| TOTAL | 475,792.00 | £ 42,436.96 | £ 104,551.00 | 2.46 | 145,728.00 | £ 19,896.00 | £ 353,115.00 | 17.75 |
| Extrapolated to 186 sites: | 3,539,892.48 | £ 315,756.50 | £ 777,858.44 | 2.46 | 1,084,186.56 | £ 148,026.24 | £ 2,637,175.60 | 17.75 |
| Extrapolated to 2000 sites: | 38,063,160.00 | £ 3,194,796.80 | £ 8,364,080.00 | 2.46 | 11,637,920.00 | £ 1,591,680.00 | £ 28,249,200.00 | 17.75 |

Throughout 2017 and 2018, the RFU hosted a number of Energy Nights which toured around the different RFU Areas. These Energy Nights gave a platform for guest speakers, consultants and equipment suppliers to network with individual clubs directly. The Rugby Football Foundation offered a 'Green Deal' loan which provides interest free cash to clubs up to £20,000 where the energy saved forms the basis of the repayments. Recommendations needed to be made by an external energy consultant, such as Energise, and evidence needed to be provided for the implementation of low-cost, quick payback opportunities. For example, a loan would not be granted for an air-source heat pump until recommendations such as LED, heating controls and cellar management controls had been implemented. In order to improve the visibility of the loan and potential savings in Clubs, we worked with Energise to conduct a programme of part-funded energy surveys across the Area 4 clubs.

Peter Shaw, Former Area Facilities Manager, RFU said:

"Thank you for Energise's time and support in delivering the surveys at clubs which has received good feedback so far and hopefully it may encourage others (186 within just Area 4) to enquire."

About

The England RFU is made up of around 2,000 member clubs of varying levels split into Areas across the country. Most clubs are operated by volunteers with employed support at a county, regional and national level.

The problem

The varied type of operations that most clubs have means that although energy use is relatively small, when the buildings are in use, they are typically energy intensive in their operation. The intensity typically comes from the large amount of hot water

capacity, inefficient lighting internally and externally, and poor control of heating and small power equipment.

With clubs being mostly self-funded through subscriptions from our members, reducing expenditure allows for reinvestment in better facilities and training. As energy is one of the highest operational costs we have, reducing it is key.

The resolution

Since 2016, the RFU has been rolling out the Energy Club to all of its national clubs. The Energy Club allows individual clubs access to incentives and advice. This has previously consisted of energy procurement advice and deals from ZTP UK (allowing members to reduce costs), access to free equipment and advice from InnServe (supporting energy saving), energy consultancy advice and surveys from Energise and knowledge sharing from other clubs. The Club was successful with many Energy Nights held in clubs across England throughout 2016 and 2017.

Following the start of the Energy Club and on feedback from clubs, the Rugby Federation Foundation launched the Green Deal Loan which would allow clubs to apply for funding for major energy saving projects, up the value of £20,000, on the basis that low-cost, quick payback recommendations have already been implemented by the club. The recommendations would have to be made by an external energy consultant. We saw a number of clubs take up the referral to external consultants and saw large savings made across the country.

More recently, we worked with Energise to increase the availability of energy surveys to clubs. Part-funded surveys were offered to all clubs in Area 4 (East Midlands and East of England). Of the 186 sites in the Area, 25 clubs took up the offer to identify savings of their electricity, gas and water consumption. Across the 25 clubs, a total annual saving of 476MWh or £42,500 with an average payback of 2.46 years was achieved.

Adam Wright, Client Lead, Energise said: “It’s been great to work with the RFU as an organisation and as individual clubs. All the club volunteers are so passionate about what they do and have been welcome to ideas which will provide better facilities and reduced running costs where the money can be spent on club development. I hope the success of the latest round of energy surveys will be seen by the other Areas and we can assist in identifying even more savings.”

Impact

The main driver for the RFU was to enable clubs to further reduce their operational costs. In the first year of the Energy Club, clubs were able to save over £55,000 directly through changes to energy contracts and procurement.

The Energy Night events allowed club members to return to their clubs with advice that would allow them to enable their own savings. Additionally, the events provided free equipment to clubs in the form of Owl internet-enabled energy monitors and InnServe’s InnEnergy timer plug designed for beer and soft drink coolers.

Across the 25 clubs involved in this recent round of energy surveys, Energise identified a total annual energy reduction of 476MWh or £42,500 with an average payback of 2.46 years. The recommendations included LED replacements, cellar management technologies, improved heating controls and air-source heat pump retrofits.

In addition, renewable feasibilities were conducted as part of the surveys and a total renewable generation of 145MWh or savings of £20,000 was identified. All recommendations made were for solar PV however it is likely that other sites will be able to take advantage of other renewable technologies based on the outcomes identified.

Next

We look forward to continuing with the Energy Club initiative to provide more up-to-date advice and additional connections with third party partners.

The recent success of the energy surveys completed by Energise will be used to showcase the possibility for financial savings at clubs for which energy is one of the top outgoing expenditures.

The catalyst
for 1% of the UK to
go **Net Zero** by 2025



Energise



ETIHAD RAIL

ETIHAD RAIL PROJECT

AIM

ER has been given the mandate of developing the rail industry in UAE and of delivering a world-class rail network and services to accommodate the requirements of the of the UAE's future transport needs. As the guardians of this mega project through which passengers and cargo goods will reach all parts of UAE, ER recognizes its role in promoting and supporting the nation's ambition of developing a vibrant and diversified economy based on long-term economic and sustainability strategies. See Picture 1

ER commits towards establishing the environmental sustainability initiatives and objectives through the operation and development of UAE rail network in accordance with principles of sustainable development, recognizing that the success of our organization is enhanced by environmentally, socially, and economically responsible business conduct. This commitment to sustainability management is aligned with Abu Dhabi's 2030 vision

and is firmly bound with ER's vision and mission for the future, which to develop and operate safe, sustainable, and cost-efficient rail-based transport solutions, connecting the UAE and serving clients, industries, and society with passion, See Picture 2.

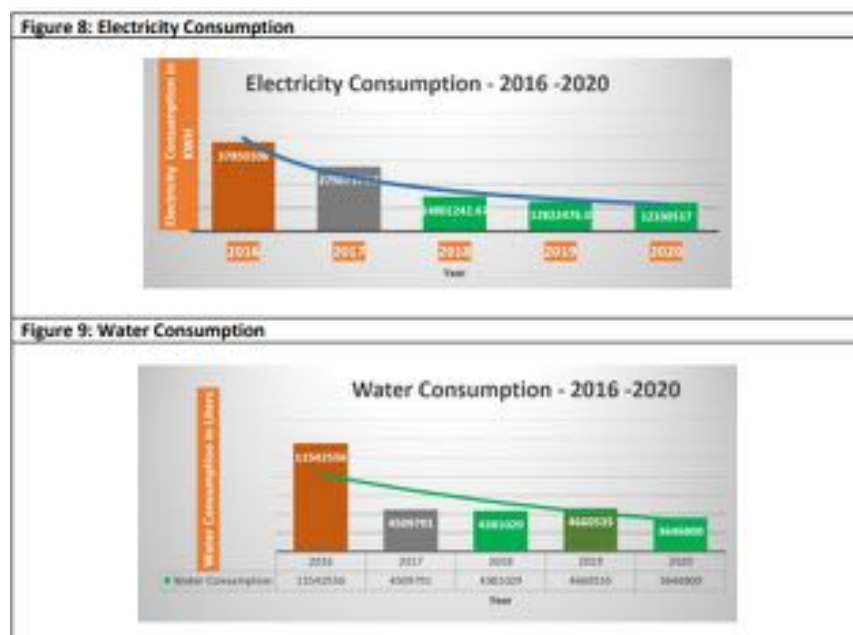
ER promotes sustainability through its services, program and operations and has an impressive track history of environmental stewardship and innovation. ER offers cutting-edge impacts and benefits: faster, safer, more reliable, and more environmentally sustainable services than current transport alternatives.

ER places the highest value on conservation of resources and operational efficiency, completing several energy-efficiency initiatives throughout the network. These efforts reflect the company's overall management approach to find and incorporate practical and cost-effective solutions to transportation and financial challenges that benefit both the environment and the community we serve.

In line with our sustainability strategy, ER and Environment agency – Abu Dhabi has started a collaboration to ensure preservation of UAE's environment and natural heritage during the planning and construction of ER project,

IN DETAIL

Sustainability is central to ER's mission to provide the best possible rail transportation services and improve regional mobility and quality of life in UAE. Advancing sustainability in all facets of business - including



service planning, rolling stock and fuel selection, facility operations, design and construction and customer service - ensures that ER is well-positioned to adapt to future environmental, economic, and social challenges.

- Adopt the 'Estidama' standards set forth by the Abu Dhabi Urban Council as guiding criteria for achieving sustainable design and construction practice in the development and remodeling of rail network and rail facilities.

Picture 7: Rolling Stock



Picture 8: Long Term Benefits



- Minimize the environmental impact of the organization's operations.
- Ensure compliance with all local and national relevant laws, regulatory and other requirements. Rigorously monitor ER's progress against meaningful goals and targets.
- Foster a culture of sustainability through ER's relationships with customers, partners, tenants, contractors, and suppliers, and participate actively in local and regional sustainability partnerships, See Picture 4 & 5.

ER has developed sustainability plan that derived from the corporate strategy which states that ER will provide a safe and sustainable freight and passenger transport railway system in the UAE through innovation and continuous improvement of technologies and practices. ER has developed goals and objectives in line with ER strategic themes and objective "Building a competitive and sustainable Network" to ensure that the environmental sustainability initiatives well be achieved in line with the corporate objectives:

- Review and evaluate all new programs and projects to ensure their balanced, holistic, and measurable addressing all three sustainability pillars: environmental, economic, and social.
- Incorporate language that supports ER's sustainability initiatives within all new leases, and contracts.

This commitment to sustainability management is fully aligned with Abu Dhabi's Vision 2030 and is

Picture 4: Business Partnership Agreement



Picture 5: Social Partnerships



firmly entrenched in the company's vision for the future, which is to connect regions and integrate industries through rail-based transport safely and sustainably. Our philosophy aims to ensure that future generations can benefit from rail and the valuable opportunities it offers.

The project is special because a fully loaded train would remove up to 300 trucks from the UAE's roads, , See Picture 8:

Short Term:

- Potential enhanced land value (land around the railway): AED23Bn over the next 50 years.
- Reduce the cost of trade.
- Reduce material transportation cost and time.
- The Employment creation & Emiratization is also sustainable in nature.

Long Term:

- Use sustainable materials which can stand high temperatures and humidity, ensuring a long design life.
- Estimated tourism benefits: AED23Bn over the next 50 years.
- A large but sustainable increase in population at the carrying capacity of some areas of the UAE.
- 70 - 80% less CO2 emissions than trucks.
- Improved air quality, as one loaded train would remove 300 container trucks from UAE road network.
- Reduce greenhouse gases by more than 2.2 million tons annually: equivalent of 375,000 vehicles.
- Estimated total benefits of emissions savings: AED24Bn over the next 50 years.
- Projected savings from road maintenance: AED8Bn over the next 50 years.

See Figure 1-9

Contributing to the UAE Economy

1. Freight Cost Savings:

Direct economic benefits include freight cost savings, business travel time savings, along with other economic remunerations. These economic benefits will support businesses, commuters, and other travelers across the region. The project will also contribute to tourism and the wider UAE economy. The cost savings made by businesses that transfer their freight carriage to rail will enable them to be more commercially successful and therefore further contribute to economic growth.

2. Increased Inward Investment:

Analysis shows that the economic benefits that ER will bring are shared across all seven Emirates. It will support exports as well as increased inward investment. It will also provide employment opportunities and increase incomes of business and property owners, as well as their employees.

3. Extending Geographic Markets:

The enhanced connectivity that ER will deliver will effectively bring businesses closer together, facilitating more efficient trade, extending geographic markets, and making a greater labor force available. Rail transport lowers the cost of trade and improves the market position of existing industries, promoting their growth, and leading to economic diversification through the creation of a new transport infrastructure and its related ecosystem.

4. Freight Facilities:

ER will manage the handling of the UAE's freight and cargo through world-class freight facilities, supporting import and export services and developing comprehensive delivery processes for freight forwarders and other stakeholders including ports.

5. Rail Industry:

Each year the rail freight industry carries goods valued at billions of US Dollars ranging from steel, cement, and construction materials. To date, only a small portion of goods exported from the UAE are transported by rail, but with a national network in place as Stage Two comes online, rail will be well placed to provide long-haul consumer services; this sector has seen steady growth in the past years and the industry predicts that rail freight will dramatically increase with consumer traffic growing fourfold.

6. Road Congestion & Maintenance:

Rail freight has a major role to play in reducing road congestion, lowering the risk of collisions, road damage and pollution. ER is actively campaigning to have the right policies in place and will provide the necessary infrastructure and terminals to accommodate more freight traffic as it is transferred to rail.

7. Multiplier Effect on UAE Economy

Located in the heart of the Middle East, with one of the world's richest cities as its capital, UAE possesses a fast-growing economy and has been increasing its international status as a global and strategic hub for commerce and travel. To meet the needs of the UAE's robustly growing economy, ER is committed to providing world-class rail transport infrastructure for passengers and freight coming into and out of UAE. Major enhancements are being undertaken at ER's new phase 2 rail network which, together with services provided by ER, are expected to augment the company's positive economic results and further support the economic development of UAE with approx. 21 billion (AED).

Contributing to UAE Environmental Protection

1. Nature Conservation:

ER work closely with the Abu Dhabi Authority for Tourism and Culture (TCA) and Environment

Agency-Abu Dhabi (EAD) to ensure that the UAE's natural environment is preserved. Reducing or eliminating risks to the environment is an essential part of the construction and operational strategy. While the railway was designed and built to have minimal impact on the region's unique flora and fauna, ER has developed and implemented an ongoing environmental protection plan.

2. Culverts and underpasses:

Several culverts and small underpasses are being built throughout the alignment. These consist of Small Underpasses (SUPs), Camel Underpasses (CUPs), Road Underpasses (RUP), Reptile Culverts (RCU) and Gazelle Underpasses (GAZ). Many gazelle underpasses have been combined with SUPs and CUPs.

3. Tree Management:

All healthy mature, native, non-irrigated trees are transplanted prior to any construction to a location agreed with the plantation owners. For example, all-natural Al Ghaf trees are identified and clearly demarcated. Disturbance to these specimens will be avoided where possible. Where disturbance is unavoidable, the specimens will be carefully removed and replanted in an alternative suitable location before works commence in the area. Trees existing within the construction corridor are tagged, removed, and translocated to a suitable alternative site as agreed with the owners. A tree management plan ensures that trees are well looked after. Surveys are conducted for the possible removal of sensitive specimens of small mammals and reptiles, and demarcation and avoidance of floral specimens and Dhub (lizard) habitats. Culverts are provided to allow free movement of Mountain and Sand Gazelles, Dhubs, Desert Monitors and other snakes, geckos, lizards and large and small mammals and reptiles.

4. Climate Change:

ER will monitor, manage, and minimize impacts on climate change by effectively removing many trucks used for freight off the road. To June 20220, ER has

transported more than 30 million tons of granulated sulphur for Abu Dhabi National Oil Company (ADNOC), the equivalent of nearly 2 million truck trips. One fully loaded train removes approximately 300 trucks from the road, producing 70%-80% less carbon dioxide emissions than the trucks required to transport the same tonnage. When Stage Two becomes operational, these figures will be significantly higher.

5. Rolling Stock:

For Stage Two heavy haul mainline freight train operations, modern locomotives have been specified with engine efficiency and emission standards according to the best proven technology available at the time of procurement. As a further measure to minimize engine emissions and fuel consumption, mainline freight train service locomotives will be supplied with a “low idle” feature to reduce engine idling speed and fuel consumption, as well as an automatic engine control system that shuts the engine down when the locomotive is not used for an extended period. Reuse of ‘grey water’ from the train wash facility is re-purposed for irrigation.

6. Locomotive Emissions:

While trains are one of the most environmentally friendly modes of transport, ER has taken additional action to minimize the railway’s environmental impact, such as implementing the United States Environmental Protection Agency’s standards for engine emission levels. Under these measures, all the engines used on the railway meet a Tier 3 emission level, which regulates the locomotives’ emissions of nitrogen oxide, sulphur oxide, volatile organic compounds, particulate matter, and carbon monoxide.

Contributing to UAE Society

1. Developing Al Dhafra Region:

As the railway network connects more areas within the UAE and GCC, various industries and

communities will expand as a result. The region will experience more economic, social and cultural growth in the form of job opportunities and industrial diversification.

2. Noise Control:

ER and ER recognize the importance of being a good neighbor and are committed to keeping noise from trains to a minimum. As the network has no level crossings (all traffic crosses the track over bridges and through tunnels), horns will only sound in emergencies. In addition, the railway utilizes the best noise reduction technology to minimize the sound of passing trains. Ballast Mats are used on bridges to reduce noise, vibrations, and degradation of ballast.

3. Crossing Points:

Crossing points have been designed to allow for the smooth flow of traffic on both the railway and roads, and with as little disruption to the surrounding wildlife as possible. Stage One includes 20 over-bridges, two under-bridges, 10 road underpasses, and 18 smaller underpasses. To cater for native wildlife, the railway also features 10 camel, 22 gazelle, and 78 reptile underpasses. For convenience, crossings are spaced at a maximum of six to seven kilometers. Stage Two will see this commitment to animal welfare carried through along the entire network, See Picture 7.

4. Job Creation:

The railway is bringing bring beneficial changes to Abu Dhabi Emirate due to increased employment and improved accessibility to community facilities for the projected increased population. When complete, the network will provide a sustainable and efficient mode of transport for public and commercial uses. The project will provide a sustainable and efficient mode of transport for both the workforce and industrial products. This will in turn promote tourism in Abu Dhabi.

5. Connect Cities:

The railway will connect rural areas to cities, improving connectivity and generating wider economic benefits for these areas. The value of time saved due to reduced road delays by car, bus, taxi, and freight users who will shift to the rail network, accounting for station-to-station road and rail time and distance is equivalent to AED 9.6Bn over the next 40 years. A reduction in the rates of accidents can be expected as the railway will lead to a lower number of kilometers travelled on the roads, hence fewer road accidents per year on the UAE's Road network, saving an estimated AED 19.9Bn over the next 40 years.



6. Reducing Highway Traffic:

The rail network will ultimately provide services for both freight and passengers, with social benefits including lower cost transportation, faster journeys than highway alternatives and reduced levels of highway traffic. By offering a time and cost advantage over trucks when compared with the no-rail scenario option for freight transportation, the ER network will attract container and bulk freight cargo that is currently transported by trucks.

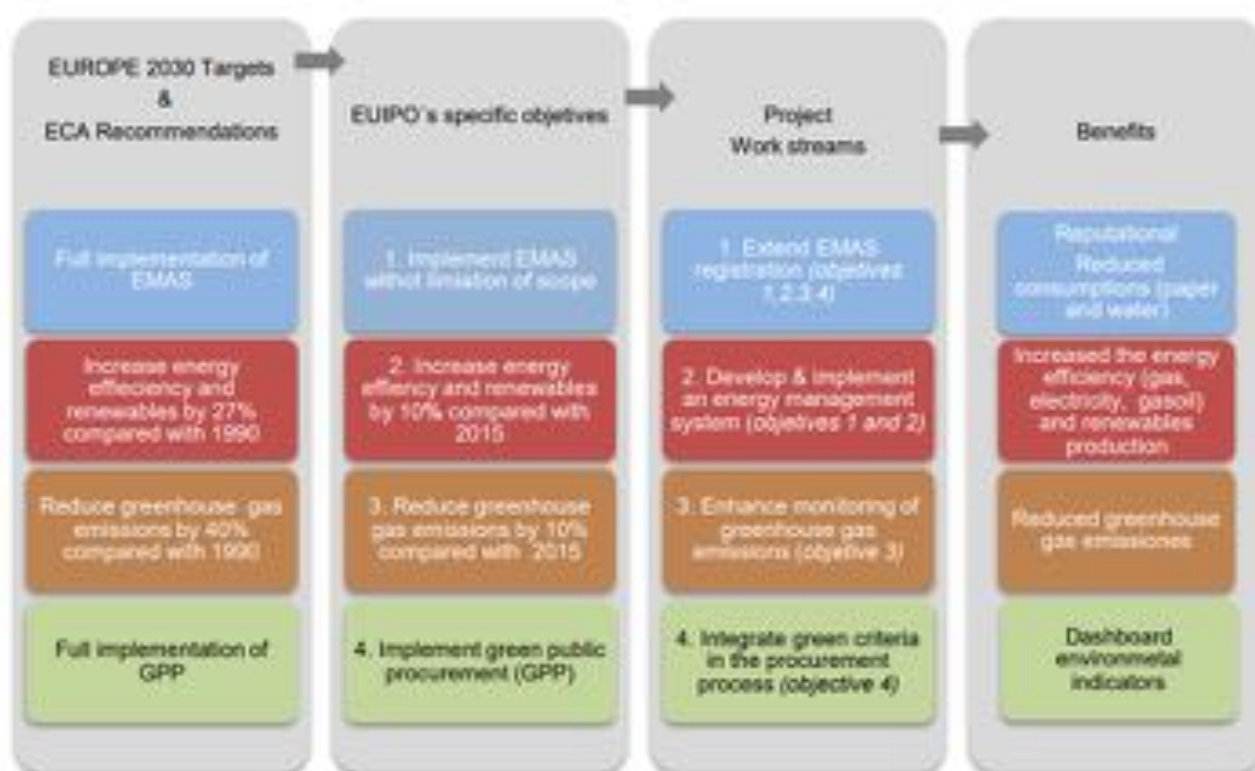
EUIPO

REDUCTION OF EUIPO'S ENVIRONMENTAL IMPACT

AIM

Environmental sustainability has been an integral part of the EUIPO's core values for more than 12 years. In 2008, the EUIPO pioneered an environmental management system – Eco-Management and Audit Scheme (EMAS) – in the area of the EU Agencies and Bodies. As well as being EMAS registered, the EUIPO is carbon footprint verified.

As part of its 2020 Strategic Plan, the Office committed to standards above and beyond applicable laws and regulations. To this end, it allocated human and financial resources (EUR 1 441 000) to a 4-year strategic project – Reduction of EUIPO's environmental impact – aimed at reducing its environmental impact, promoting the transition to a low-carbon economy and enhancing the environmental value locally.



In general, the following stages will be undertaken for each WS:



The project's objectives were aligned with the EU Strategy 2020 for a smart, sustainable and a more resource-efficient economy. The Office pledged to decrease by 2020 10 % of its paper, toner, water, electricity and gas consumption; produce on-site 27 % of its renewable energy; cut by 10 % its carbon emissions and become a carbon-neutral organisation. All this while adhering to recognised international standards such as the EMAS, the Greenhouse Gas Protocol, the ISO 50001 on energy management and the European Commission's green public procurement criteria.

ACHIEVEMENTS

At the end of 2019, the project overachieved the expected benefits. Compared with the baseline period (2015), the EUIPO reduced its consumption (per on-site worker) of paper by 73 %, toner by 79 %, water by 38 %, electricity by 32 % and gas by 74 %. Waste generation dropped by 65 % while greenhouse gas emissions were reduced by 33 %. Also, 30 % of the EUIPO's energy demand is now produced on-site from renewable sources. Heating-related fossil fuel consumption has been reduced to zero.



The EUIPO has offset its residual CO2 emissions and is, therefore, a carbon-neutral organisation. The offsetting was done through two local forestation projects in cooperation with the local authorities and via certified offsetting projects (i.e. Madre de Dios Forest Conservation project in the Peruvian Amazon).

The project ensured full environmental transparency by publishing a third-party endorsed Environmental Statement and a Carbon Footprint report. These reports provide an exhaustive account of the Office's environmental performance and activities.

By developing learning materials (1-hour e-learning module, interactive environmental statistics, news items and publications on social media and intranet) and as reflected by the relevant surveys, the project increased environmental awareness among staff.

IN DETAIL

The EUIPO committed to the EU environmental objectives, to act as an eco-minded role model organisation and promote best environmental practices within the organisation, its supply chain, local community and among other EU, national and local institutions.

The project addressed the adoption of organisational changes to bring on board senior management and staff in reducing the EUIPO's negative environmental footprint. It also managed technical investments in the buildings' installations to minimise the associated consumptions.

The project hence managed the following improvements.

- To extend the environmental management system – EMAS – to all new buildings, the latest one being in 2019. The EUIPO restructured its headquarters as an EMAS certified single site consisting of three buildings with a total usable floor area of 40 722 m² and 10 643 m² of gardens.
- To install a water treatment plant to collect the greywater from the showers in the gym, condensation from the air conditioning and from the washing of fruit in the kitchen, costing EUR 77 000. That contributed to a 38 % reduction of water consumption per on-site worker in 2019 compared with the baseline.
- To increase the recycling capability by improving the sorting of materials. The EUIPO acquired new containers and shredders to transform pruning waste into raw material for composting on-site. Since 2016, the Office has donated electronic items and old furniture to non-profit organisations, a step towards a circular economy. Thus, in 2019 the waste per on-site worker was reduced by 65 % compared with the baseline while the recycling levels reached 98 %.
- To raise environmental awareness through the internal and external publication of 250 environmental-related news articles between 2016 and 2019. The Office developed a 1-hour environmental e-learning module mandatory for all staff and organised conferences on ocean health with prominent guest speakers from the University of Alicante's Marine Research Centre and Dos Winkel, ocean conservationist. Annually, the Office takes part in an EU interinstitutional competition (VeloMai) to promote the use of bicycles and coordinates a beach clean-up with its staff and their families.
- To implement an energy management system following the standard ISO 50001. The EUIPO installed 129 photovoltaic panels, six heat pumps in two of its buildings to eliminate the use of gas and two heat pumps for geothermal heating in its oldest building. The total costs were EUR 708 000. The EUIPO hence reduced its overall consumption (per on-site worker) in electricity by 32 % and gas by 74 %. In addition, 30 % of its energy demand is produced on-site from renewable sources.
- To offset its overall carbon emissions by planting 344 trees in the areas located to the north-east of its premises. In addition, in collaboration with the local Spanish authorities, the EUIPO planted an additional 677 trees in another location indicated by the City Hall. The remaining emissions for the years 2016, 2017 and 2018 (11 161 tons of CO₂) were offset through certified offsetting projects, such as the Madre de Dios Forest Conservation project in the Peruvian Amazon. The costs of the offsetting were EUR 332 000. The greenhouse gas emissions per on-site worker were reduced by 33 % in 2019 compared with the baseline.
- To organise two conferences on Green Public Procurement for a broad audience consisting of managers, suppliers, procurement officials and technical experts. Representatives from

the European Parliament, the European Commission and the European Environment Agency shared their experiences on implementing ecological criteria in their respective organisations.

- To include tailored green public-procurement criteria in all calls for tenders (CfT) launched by the Office. As of 2019, all of the EUIPO's CfT included at least one environmental criterion, to promote the green transition in its supply chain and collaborators.
- To install new multifunctional printers that allow printing and copying only via the staff's access badge. Hence, staff members can track their paper consumption via online software, while monthly business intelligence printing reports – using Power BI – are published in the intranet. The EUIPO uses only recycled paper lower than 80 gsm. The paper consumption per on-site worker was reduced by 73 % in 2019 compared with the baseline while the toner dropped by 79 %.

The EUIPO self-funded the total costs of this project, EUR 1 441 000, one staff member and one consultant.

The EUIPO has become a point of reference on environmental performance among EU Agencies, responding to queries from other EU Institutions and offering advice on the implementation of environmental practices and know-how. The EUIPO delivered environmental presentations to the European Parliament in 2018 and the European Space Agency in 2020.

In 2019, the Office welcomed the European Commission's Vice President Frans Timmermans who expressed the essential role the EUIPO plays in shaping the EU through the protection of intellectual property, including in terms of climate change.

Meanwhile, the local community can now enjoy the trees planted in green spaces by the Office as part of its offsetting strategy.

89 % of EUIPO staff expressed their satisfaction with the Office environmental policy during the staff satisfaction survey organised in 2019. Building on this positive feedback and experience, the Office restated its environmental commitment in its Strategic Plan 2025 – Goal 3.3 Towards the future sustainable workplace. Eliminating the use of non-renewable resources, reusing waste and incorporating eco-criteria to its processes in line with the principles of the circular economy while raising awareness around these issues are top priorities. The EUIPO is now working on the conceptual design of various projects aimed to:

- reduce the amount of paper by continuing the digitalisation of its services and using innovative equipment for producing paper in-house.
- reduce travel emissions by adopting enhanced teleconference and immersive facilities.
- reduce waste by using bio-based materials and composting on-site.

In 2019, the EUIPO won an award for its Commitment to Energy Efficiency from the Spanish Association of Energy Efficiency Companies. In 2020, the EUIPO renewed its EMAS certification and validated its carbon footprint report in line with the Greenhouse Gas Protocol.

THE FLOORBRITE GROUP

WASTE MANAGEMENT INNOVATION & INCREASING SUSTAINABILITY AWARENESS AT ESB CARRINGTON POWER STATION

AIM

The Floorbrite Group have been providing total Facilities Management services at Carrington Power Station ESB since 2016. Our bespoke Waste & Environmental Management Service was introduced in September 2016. We were successfully chosen following a Tender process originally in 2016 and were also awarded the contract for a further 2 years in 2018 to offer a tailored alternative to several facilities services including waste management and removal, cleaning, and washroom services. This Tender was extended further in 2019.

Carrington Power Station is a Combined Cycle Gas Turbine power station, which was completed in Autumn 2016 and began commercial operation on 18th September 2016.] It is located on the site of a former coal-fired power station, close to

the villages of Carrington and Partington in the Greater Manchester Area and 12 km southwest of Manchester City Centre. The Manchester Ship Canal and the River Mersey run alongside the site in Trafford, Greater Manchester, in North West England. In early 2016 our Waste & Environmental Consultant, Trudie Williams, who is an ISO 14,001 Lead Auditor and WAMITAB accredited, met with ESB Carrington Power Station and discussed the waste solutions. Our ideas fitted perfectly with their company objectives of zero landfill and increase external recycling and offer office recycling options.

In becoming a responsible supplier and manufacturer by diverting a higher percentage of waste to recycling means, ESB Carrington Power Station focus switched to the waste produced on site. The station is the first large scale gas fired power plant to come online in Great Britain since 2013 and can power more than one million homes and businesses in the Greater Manchester area. Trudie was able to help the management team outline their aims to reduce ESB Carrington Power Station carbon footprint helping them to achieve their sustainability goals, reduce costs, increase recycling and divert waste from landfill.

Floorbrite's aims were to reduce waste removal costs, encourage 100% recycling, achieve zero landfill, introduce full segregation of waste streams, recover energy from waste. Get buy in from management and staff to increase recycling, fully train staff, reduce overflowing containers and handle waste in the correct way. Finally, by working closely with the Operations Team on site we have created a powerful case study to target other Power Stations to reduce their waste to landfill.

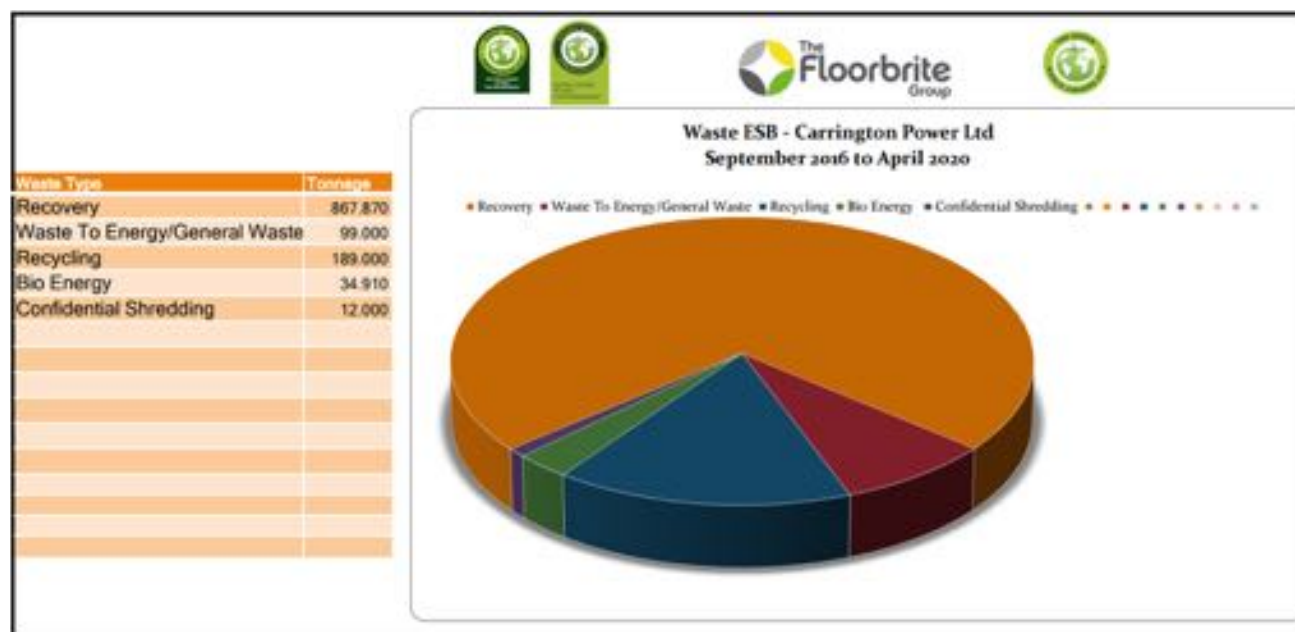
Thank you for recycling



ACHIEVEMENTS

Our achievements have certainly helped the environment by reducing Co2 and transport (road mileage) to and around Carrington Power Station ESB's site and neighbourhood in the form of waste vehicles.

Within the offices we have been able to increase the amount of paper waste removed for shredding and recycling, externally we have increased the segregation of all other types of waste including wood, metal and hazardous waste, ensuring that each waste stream had a sustainable collection and disposal method.



The reduction in waste pickups has in turn reduced Carrington Power Station ESB's costs. Movement of waste on site has reduced due to the reorganisation of waste disposal and by the creation of a waste compound and clear signage, this has helped to increase recycling options and the reduction in the total amount of waste produced and at the same time decreasing the amount of vehicle movement around the site.

We have introduced the separate removal of Mixed Recycling and diverted the General Waste to waste to energy. Following a complete chemical analysis of the Sludge based waste produced within the pumping station, we were able to re classify the EWC Waste Code, which ensured further disposal costs saving and a cleaner disposal method.

By working closely with the Chemist and the management team and staff who have become passionate about recycling. There is a real "Feel good factor" proved by Trudie's reports and this has also inspired staff to take what they've learned home and become greener individuals. There is a definite change in staff culture with all looking at ways to make other waste reductions. Our next project in 2019 is the reduction of single use plastic milk cartons and the introduction of a cooling milk vending system.

With Floorbrite's recommendations, Carrington Power Station ESB have invested more in their onsite segregation process and promoted their achievements to their supply chain, inspiring their customers and suppliers to carry out more recycling.

By breaking down the waste into individual waste streams, Trudie's waste data and environmental reports give a clearer picture of the waste data that is recorded. There is greater control over disposal costs and control of the waste on site.

Carrington Power Station ESB are very proud that the introduction of Floorbrite's new systems with the co-operation of the whole of the ESB Power Station team have continued to achieved zero to landfill assessing new waste streams and finding new disposal methods.

IN DETAIL

What did the project involve doing?

- Site Audit/several visits
- Visit to site 4 x per week during implementation process
- Ongoing Quartley/Monthly visits with the Operations Manager
- Special cleaning of outside area's
- External compost unit for green waste
- Control systems implemented to reduce transport for hazardous waste
- Implementation of Internal Feeder waste containers
- Placement of Skips/signage
- Purchase of suitable Bespoke Skips
- Implementation of containers (External)
- Agree and review collection frequencies
- Provision and installation of signage
- Provision of internal recycling containers
- Provision of Confidential Consoles
- Managing the removal of Contractor Waste – created during build process
- Training and education emailed on site

Negotiating new waste contractors and contracts

Arrange new delivery and collection process

Arranging Escort protocol on site

Arrange for Induction for all Contractors

Offer bespoke services for Hazardous Waste removal

Why did you do it?

In becoming a responsible company by producing a bespoke service, Carrington Power Station ESB wanted to also focus on their own waste production at their site in Carrington Manchester.

What did it cost and where did the money come from?

The money for the project came from the annual Budget for waste management, with a consistent review process and looking at innovation within the waste disposal, regular meeting and contractor visits are carried out to keep the annual costs on track each year.

If quantifiable what did the project achieve in terms of sustainability, development, economy, environment and equity.

All Carrington Power Station ESB staff, management and customers have been educated about the benefits of recycling with a change in culture by seeing the achievements unfold. Carrington Power Station ESB are enthusiastic about promoting their success and their green credentials with the ability to become attractive to PLC Companies and their own KPIs.

The local community have benefitted from a reduction in traffic by utilising local disposal stations. Carrington Power Station ESB have benefitted from cost saving and will benefit from further investment and savings.

Floorbrite collaboration have reduced skip collections per annum from 104 to 66 and increased recycling to 70%. and still increasing.

In achieving zero to landfill, with the fantastic support and effort by all members of the team, since September 2016 to the April 2020, Carrington Power Station ESB diverted 1202.78 tonnes of waste from landfill, saved 20,447 trees from destruction and the equivalent to 14,5521 kg of Co2. With the total of 867.87 ton of waste recovered from the start of the project until April 2020.

Longer term benefits

As Carrington Power Station ESB are the leading edge in gas powered technology and are embarking on further accreditations within the business. With their own waste management achievements, their credibility in this area will increase. As Carrington Power Station ESB own customers become more aware of the

achievement and of their own responsibility to achieve sustainability goals, Carrington Power Station ESB trusted track record will be able to encourage and inspire customers to follow suit.

The story does not stop with what Floorbrite have achieved so far. We have inspired Carrington Power Station ESB to look at additional recycling innovations and make further investment in containers and signage to increase recycling in other areas.

The introduction in 2019 of Composting Containers for external Ground Maintenance Waste and Floorbrite have also changed the method of disposal and storage of Inert Waste from the pumping station on site to follow a sustainable and long-term disposal plan. The project in 2019-20 was introduced to reduce single use plastic milk bottles on site with the



DRY MIXED RECYCLABLES



All items must be Empty and Clean



- ALUMINIUM CANS
- PLASTICS (clean)
- FOOD CANS (rinsed out)
- TETRAPACK
- PAPER SCRAPS

- NEWSPRINT, MAGAZINES & BROCHURES
- LIGHT CARDBOARD
- ITEMS MARKED WITH 



- LIQUIDS
- GLASS
- FOOD
- CONTAMINATED FOOD PACKAGING
- POLYSTYRENE PACKAGING

- SANITARY WASTE
- ELECTRICAL GOODS / LIGHT BULBS
- CLOTHES / SHOES
- GARDEN WASTE

introduction of cooling vending, this will remove over 300 large plastic milk containers, per week from site and reduce the amount of waste considerably.

Was there anything innovative about the project?

Introduction of bespoke covered containers to reduce issues with waste overflowing around the site. Complete chemical analysis of type of waste and recommend correct disposal codes, which helped to reduce high disposal costs.

Introduction of correct size covered containers to reduce collections on site.

Introduction of storage methods, use of pallet boxes which reduce the costs of transport and visits.

Clear identification and tracking of hazardous waste, to reduce transportation costs.

Re organisation and disposal of previous builder's project waste which was left on site following the initial build project.

Ongoing support by the Waste Team to audit every type of waste on site.

Can other organisations benefit from implementing your methods?

Yes

Utility companies could benefit from this method.

Chemical analysis to correctly code all waste streams

Manufacturing and Packaging companies could benefit

Companies that have multiple skips or bin collections weekly would benefit from the introduction of a bespoke containers on site, reducing rental costs on skips.

What did you learn from the project and are you planning any further development?

Further development for the reduction of general waste on site.

Further development for the segregation of hazardous waste recycling on site.

Reduction in single use plastics.

Further development of handling method of Inert waste on site.

Carry out regular review meetings and site visits to help achieve consistent reduction on site.

Awards Gained

2015 Bronze Green Apple Award – for the built Environment for improving environmental awareness

2015 Golden Service Awards x 2 (manufacturing and Hospitality)

2015 Silver Green Apple Award – Estate Management

2016 RoSPA Gold

2016 Gold Green Apple Award – Service Industries

2016 Green World Ambassador Award

2017 Silver Green Apple Award – Waste Management

2017 Green World Ambassador Award - Dubai

2017 RoSPA Gold

2018 Golden Service Finalist Award (Environmental Awareness)

2018 Silver Green Apple Award – Waste Management

2018 Green World Ambassador Award – Turkey

2018 RoSPA Gold

2019 Green Apple Award – Best in field – Waste Management

2019 Green World Ambassador Award – Vietnam

2019 RoSPA Gold

2020 RoSPA Gold

2020 Finalist Award for Tomorrow's FM

2020 Finalist Award for Tomorrows Cleaning

Case Study

ESB Operating the UK's most Efficient and Flexible Thermal Plants

ESB invested more than £800m in developing the UK's most efficient thermal plant in Carrington, near Manchester.

The 884MW gas fired power station is also one the UK's most flexible plant with the ability to allow renewables such as wind and solar onto its system at any given time. The station is the first large scale gas fired power plant to come online in Great Britain since 2013 and can power more than one million homes and businesses in the Greater Manchester area.

Carrington Project Key Facts

- 4.8 million hours worked on the project
- 4,893 workers involved in the project from commissioning to development
- 850 workers on site during peak construction times
- 40 permanent staff on site
- More than 50 exceptional load deliveries removed from local roads by using the Manchester Ship Canal
- A Green Travel Plan was implemented to transport staff from satellite car parks to site each day
- 35,000 m³ of concrete poured
- Acting Responsibly

- ESB is a business built on the strength of its people. We are proactively embedding new safety, sustainability, people development and corporate responsibility strategies within our operations. Our objective is to be a positive and effective partner for each of our stakeholders, our staff, our customers, the communities in which we operate and for our environment.
- Our Businesses

As a strong, diversified, vertically integrated utility, ESB operates right across the electricity market: from generation, through transmission and distribution to supply.

Aiming for zero waste to landfill

Carrington Power Station ESB invested time in partnership with The Floorbrite Group in the recycling system to achieve zero landfill waste. Floorbrite have introduced recycling facilities for the separate collection of confidential paper waste, paper, cardboard packaging, sludge, water, wood, metals, plastics and organic waste. The prevention, re-use and recycling measures introduced by Carrington Power Station ESB and Floorbrite have reduced the amount of residual waste it produces by 66%. With the introduction by Floorbrite of the correct size containers and reorganisation of the production of sludge waste, we have been able to reduce the collection of waste from two skips per week to one skip per month. This helps reduce movement on site, cut down on road traffic in the surrounding housing estate and reduce road mileage and Co2.

Diverting Recycling and food waste.

The introduction by Floorbrite of Internal Recycling Containers and Food Caddies in canteens areas, has diverted all food-based waste into the external food bins which is then disposed of via Bio Energy method.

Recovering other value

Since September 2016, food waste has been collected weekly and sent to an anaerobic digestion plant to produce biogas and bio fertiliser. Since September 2017 following the installation of the new power pump, and a complete analysis of the waste by the Chemist all sludge water waste has been diverted to land spreading.

Enabling re-use

As part of Floorbrite's objective to decrease the amount of waste produced on site, recycling containers have been introduced and has increased paper re-use, paper waste is sent for off-site and 100% recycled. All cardboard waste is now separated and sent for recycling. By the introduction of segregation of all mixed recyclable waste, Floorbrite have used a separate container for disposal via a recycling method on site. This has reduced collection of the waste considerably. All this waste is removed and sent to a recycling facility which recovers 99.6% of the waste and the balance of 0.04% is used in waste to energy. This has achieved Zero Landfill for Carrington Power Station ESB and has also seen a reduction in waste by 43%.

Maximising opportunities for recycling

Carrington Power Station ESB has set targets to increase the amount of waste it recycles. General Waste is a major waste item and Carrington Power Station ESB Staff are working closely with Floorbrite to look at ways of reducing the amount it needs to dispose of by encouraging suppliers to: Optimise packaging to prevent excess; and use re-usable containers. Any cardboard that cannot be re-used is recycled. Using the larger container means fewer visits from recycling contractors to collect the waste and less space is taken up by waste awaiting collection also improving site health and safety. Segregation of any recyclable waste item used within the production of the product on site is in the forefront of all Staff.

Continued opportunities

Floorbrite are now looking into reducing waste collections, by increasing segregation and removal methods on site of hazardous waste. Which will further reduce the collect frequencies of the collections which was originally 2 times per month to our new proposed once per month. In 2019 we changed this frequency to every 8 weeks by using larger collection vehicle and Haz pack removal methods once the waste has been assessed on site.

Communicating with Staff and Management

Following initial discussions with Floorbrite, Carrington Power Station ESB aspired of achieving Zero Landfill. Floorbrite have been able to reduce waste disposal costs, which has inspired the Management and Staff into looking at how the saving can be reinvested in ways of recycling more within the business. Working together with staff at the Power Station, the Floorbrite team have visited site to carry out full audits in the areas of concern to ensure initial targets are being met. Floorbrite trained Staff on the safe use of the compactor and placed signage to help staff understand where items go to be recycled. Train cleaning operatives on the movement of waste, type of waste, container and colour of bags required. Quarterly waste Data reports are provided enabling the Management to see the improvement and the weight of each collection and share this with staff to motivate and keep the momentum. Only by measuring the waste can consistent improvement be made. Carrington Power Station ESB will in future be able to inspire their supply chain with the good news waste story so far challenging them to make changes.

Floorbrite supplied xmas trees around the site and Carrington Power Station kindly donated the trees to local schools, our team delivered them locally FOC.

THE FLOORBRITE GROUP

WASTE MANAGEMENT INNOVATION & INCREASING SUSTAINABILITY AWARENESS AT JOHN HOGG MELLOR'S ROAD TRAFFORD PARK MANCHESTER M17 1PB

AIM

The Floorbrite Group have been providing total Facilities Management services at John Hogg since 2019. Our bespoke Waste & Environmental Management Service was introduced in June 2019. We were successfully chosen following a site audit and introduction in 2019 to offer a tailored alternative to several facilities services including waste management recycling and removal, cleaning, and washroom services.

John Hogg rose from humble beginnings as flax traders in Northern Ireland in 1890 to one of the world's leading manufacturers of dyes and markers for the petroleum industry – there journey. In 1890 John Hogg sets up business in Belfast, Northern Ireland to trade in flax. Today they are one of the biggest suppliers of Irish Linen.

John Hogg sets up business in Belfast, Northern Ireland to trade in flax. Today, they are one of the biggest suppliers of Irish Linen. In 1896 the SUDAN brand was launched by BASF, going on to cement there place as one of the most recognisable dye brands in the world.

In early 2019 our Waste & Environmental Consultant, Trudie Williams, who is an ISO 14,001 Lead Auditor and WAMITAB accredited, met with the team at John Hogg to introduce recycling and waste solutions. Our ideas fitted perfectly with their company objectives of zero landfill and increase external recycling and the offer of office recycling options fitted in perfectly with their vision.

In becoming a responsible supplier and manufacturer by diverting a higher percentage

of waste to recycling means, John Hogg's focus switched to the waste produced on site. Having achieved ISO 9001 in 1989 John Hogg's vision to improve the recycling across there office facility was paramount. Trudie was able to help the management team outline their aims to reduce John Hogg's carbon footprint helping them to achieve their sustainability goals, reduce costs, increase recycling, and divert waste from landfill.

Floorbrite' s aims were to reduce waste removal costs, encourage a higher percentage of recycling, achieve zero landfill, introduce full segregation of waste streams, recover energy from waste. Get buy in from management and staff to increase recycling, fully train staff, reduce overflowing containers and handle waste in the correct way. Finally, by working closely with the Purchasing Team on site we have created a powerful case study to target other businesses to reduce their waste and divert from landfill

ACHIEVEMENTS

Our achievements have certainly helped the environment by reducing Co2 and transport (road mileage) to and around John Hogg's Trafford Park site and neighbourhood in the form of waste vehicles. Movement of waste on site has reduced due to the reorganisation of waste disposal and by the creation of internal waste containers and clear signage, this has helped to increase recycling options and the reduction in the total amount of waste produced and at the same time decreasing the amount of vehicle movement around the site. We have introduced the separate removal of Mixed Recycling and separated Card for recycling and on the reduction of General Waste have then diverted



This is to certify that

John Hogg

participated in

Floorbrite Group Recycling Program

The Period from 2019 to June 2022

Diverted 8,909 tonnes of waste from landfill in this period

Achieving Zero Landfill Status

Recycling 23,860 tonnes of waste

Saving 407 trees from destruction

Floorbrite Group congratulate staff members on
the positive impact this recycling program has
made towards saving our environment

Thank you all for your continued support

With thanks

Green World Ambassador



the General Waste to waste to energy. With the introduction of Kitchen Caddies and external food containers, this has shown a high improvement of recycling and diversion from Landfill. Within the offices we have been able to increase the amount of recyclable and food waste removed for recycling, externally we have increased the segregation of all other types of waste ensuring that each waste stream had a sustainable collection and disposal method.

By working closely with the management team and staff who have become passionate about recycling. There is a real “Feel good factor” proved by Trudie’s and this has also inspired staff to take what they have learned home and become greener individuals. There is a definite change in staff culture with all looking at ways to make other waste reductions.

With Floorbrite’s recommendations, John Hogg have invested more in their onsite segregation process and will soon be able to promote their achievements to their supply chain, inspiring their customers and suppliers to carry out more recycling.

By breaking down the waste into individual waste streams, Trudie’s waste data and environmental reports for the last 24 months data provide a clearer picture of the waste data that is recorded. There is greater control over

disposal costs and control of the waste on site.

John Hogg's staff should be very proud that with their co-operation of the whole of the John Hogg have achieved zero to landfill.

IN DETAIL

What did the project involve doing?

- Site Audit/several visits
- Visit to site 2 x per week during implementation process
- Implementation of Internal kitchen caddies
- Placement of Skips
- Purchase of suitable Bespoke Recycling Containers
- Reorganisation of type of waste for disposal
- Implementation of containers (External)
- Agree and review collection frequencies
- Provision of signage
- Provision of internal recycling containers
- Training and education
- Negotiating new waste contractors and contracts
- Arrange new delivery and collection process
- Why did you do it In becoming a responsible company by producing a bespoke service, John Hogg wanted to also focus on their own waste production at their site in Trafford Park Manchester.

What did it cost and where did the money come from?

The money for the project came from the annual Budget for waste management, with a consistent review process and looking at innovation within the waste disposal, regular meeting and discussions were carried out to keep the annual

costs on track each year.

If quantifiable what did the project achieve in terms of sustainability, development, economy, environment, and equity.

All John Hogg staff, management and customers have shown interest about the benefits of recycling with a change in culture by seeing the achievements unfold.

John Hogg purchasing team are enthusiastic about promoting their success and their green credentials with the ability to become attractive to PLC Companies and their own KPIs.

The local community have benefitted from a reduction in traffic by utilising local disposal stations. John Hogg will benefit from keeping costs to a minimum and will benefit from further investment and savings.

Floorbrite initial collaboration identified that over 30% of the initial waste produced, could be recycled, once the process was rolled out these percentages have achieved a far higher level and have continue to rise throughout 2019 - 2020 - 2021 and continued through the uncertain times of 2022.

In achieving zero to landfill, with the fantastic support and effort by all members of the team, since 2019 to the June 2022, John Hogg diverted 8.909 tonnes of waste from landfill, saved a total of 407 trees from destruction. With the total of 23,950 ton of waste recovered and recycled from the start of the project until June 2022.

Recycling achieved in part of 2019 - 58% - Waste to Energy diverted 42%

Recycling achieved in 2020 - 69% - Waste to Energy diverted 31%

Recycling achieved in 2021 - 77% - Waste to Energy diverted 23%

Recycling achieved early part of 2022 - 79% - Waste to Energy diverted 21%

Longer term benefits

As John Hogg are the leading edge in technical solutions. With their own waste management achievements, their credibility in this area will increase. As John Hogg own customers become more aware of the achievement and of their own responsibility to achieve sustainability goals, John Hogg trusted track record will be able to encourage and inspire customers to follow suit.

Was there anything innovative about the project?

Introduction of internal bespoke containers to reduce issues with cross contamination of recyclable material.

Introduction of correct size covered containers to reduce collections on site.

Introduction of kitchen caddies to increase food recycling options.

Clear identification and tracking of each waste stream to help increase recycling throughout the project.

Can other organisations benefit from implementing your methods?

Yes

Manufacturing companies could benefit from this method.

Manufacturing and Packaging companies could benefit

Companies that have multiple skips or bin collections weekly would benefit from the introduction of a bespoke containers on site, reducing rental costs on skips.

What did you learn from the project and are you planning any further development?

Further development for the reduction of general waste on site.

Further development for the segregation of recycling on site.

Reduction in single use plastics.

Carry out regular discussions with customer to help achieve consistent reduction on site.

GENQUIP

GENQUIP-GROUNDHOG UNISEX SOLAR HYBRID TOILET

AIM

Genquip-Groundhog Unisex Solar Hybrid Toilet

Project Aims

The aim of this project, the development of the Unisex Solar Hybrid Toilet was to provide hygienic toilet facilities to construction site workers in a sustainable fashion. Genquip-Groundhog knew that construction site managers were already providing sanitary welfare facilities for their staff; however, these managers were under increasing pressure to reduce the use of fossil-fuel-powered machinery.

With this information in mind, Genquip-Groundhog engineers decided to design and build a toilet arrangement that would lower the burden of fuel costs, reduce carbon emissions, and bring down the need for frequent servicing. To lower water usage Genquip-Groundhog added a rainwater harvester which would collect water for toilet flushing.

One final factor was also considered. With the increasing number of female workers on construction sites, Genquip-Groundhog decided to incorporate female facilities into one unit, making it suitable for both sexes.

RJC PURCHASE THE SOLAR HYBRID ECO TOILET

RJC have a working relationship with clients demanding toilet units offering reduced generator and water usage in clean safe and robust environment.

Innovative, functional, environmentally efficient and cost effective the Solar Hybrid Eco Toilet units have been a great addition to the RJC fleet of welfare products. The units have an in-built effluent tank, so there is no need to hire separate effluent tanks saving time and money whilst offering a huge reduction in fuel usage, carbon emissions and service schedules.

The units can also be fixed to a trailer or demountable.



Key Features:

- Low flush eco toilet
- One male and one female toilet
- Waterless urinal trough – 100% reduction in water usage
- Demountable or fixed to trailer
- Rain harvester tank for toilet flush – 61 Litres
- 1000 litre in built waste tank
- Powered by roof mounted solar panels with generator back up



Site welfare facilities need power and this power usually comes from a diesel generator. The law requires that these facilities are always available, which usually means that the generator is constantly running throughout the day. This incurs burgeoning fuel costs, regular servicing, and unacceptable carbon emissions. In addition, water conservation is becoming an important issue when running welfare facilities on site.

ACHIEVEMENTS

Genquip-Groundhog Unisex Solar Hybrid Toilet

Project Achievements

With existing and planned regulations in UK major cities designed to limit the use of diesel-powered machinery, the Genquip-Groundhog Unisex Solar Hybrid Toilet has been manufactured to severely reduce the amount emissions it discharges by confining the number of hours the generator needs to run, alongside a significant lowering the amount of water usage.

The immediate achievements of this project are:

1. Reduced fuel costs of up to 99%
2. CO2 emission savings up to 99%
3. Reduced generator servicing costs

4. The use of waterless urinal troughs = 100% reduction in water usage
5. Rain capture for the low flush eco-toilet – reduces water usage
6. Less generator use - low noise pollution

Unlike many site toilet systems that only cater for two persons at any given time, up to five people, male and female, can simultaneously use the Unisex Solar Hybrid Toilet.

An on-board 230v standard voltage power outlet has been fitted when mains power is available.

The units' hot water and warm air supplied by a system that uses a miserly 0.3 litres of diesel per hour.

The Unisex Solar Hybrid Toilet will help a site to comply with current and future regulations.



IN DETAIL

Genquip-Groundhog Unisex Solar Hybrid Toilet

Project Description

Genquip-Groundhog is a partnership between two long-established privately-owned companies that have been engaged in business together for over 30 years. With state of the art modern manufacturing facilities based in South Wales, the partnership specialises in the manufacture and marketing of environmentally sensitive construction site accommodation systems, which includes both static and mobile units.

The first Groundhog mobile welfare unit left its production line in 1987.

Genquip-Groundhog has a solid supply chain and they are always open to new innovations presented to them by their suppliers, particularly if these conceptions address pressing environmental issues.

Genquip-Groundhog remains completely in tune with the modern demands of the market place. Their active participation in general and specialist construction trade shows together with rental focussed exhibitions, throughout the UK, brings them very close to hirers, operators, and users of their products. Through this targeted marketing, Genquip-Groundhog became aware of the requirement for on-site toilet facilities that lowered fuel costs, reduced emissions, conserved water usage, and brought down the need for frequent servicing.

Consequently, Genquip-Groundhog invited suppliers and manufacturers of solar panels, high-power batteries and rainwater harvesting systems to present their products to a panel of Genquip-Groundhog managers.

Each system was carefully analysed and tested to ensure that each product was compatible and able

to work together in tandem, to deliver a reliable hybrid system.

The selected systems were assembled and built into a purposely built steel welfare unit, which was designed for both mobile and static use. Genquip-Groundhog's experience in building secure, vandal-proof, rental quality units was employed to ensure that the Unisex Solar Hybrid Toilet met with all the demands of the construction rental industry.

One other factor was considered. With the increasing number of female workers on construction sites, Genquip Groundhog decided to incorporate female facilities into one unit, making it suitable for both sexes.

The Unisex Solar Hybrid Toilet is a combined male and female toilet system that is designed for use on construction sites. The female area features a low flush eco-toilet with a 400 litre waste tank. The male compartment also has a low flush eco-toilet and a 1200mm waterless urinal with a 1200mm stainless steel wash trough with two warm water taps. Both female and male users of the Unisex Solar Hybrid Toilet benefit from; warm water supplied by an on-board heating system, 12V LED lighting with PIR, liquid soap, and paper towel dispenser.

Genquip-Groundhog placed carbon emission reduction; lower fuel costs and empowering the use of renewables are at the heart of Unisex Solar Hybrid Toilet.

Uniquely, the Unisex Solar Hybrid Toilet is powered by a combination of a highly efficient 130amp power AGM battery, which is charged via an intelligent solar power system with a built-in controller. The



Unisex Solar Hybrid Toilet

The demountable or fixed to trailer **Solar Hybrid Toilet** is the latest concept in 12 Volt technology delivering cost effective and environmentally friendly, robust & easy to use **mobile** toilet facilities.

The Groundhog anti-vandal Solar Hybrid Toilet Unit has an in-built effluent tank, so there is no need to hire separate effluent tanks saving you time and money.

Robust and incredibly efficient, these Solar Hybrid Toilets offer huge reductions in fuel usage, carbon emissions and service schedules. Incorporating all the latest environmental and safety technologies, these units are ideal for the ever increasing demands of the event and hire industry.

- > Low flush eco toilet
- > One male and one female toilet
- > Waterless urinal trough – 100% reduction in water usage
- > Demountable or fixed to trailer
- > Rain harvester tank for toilet flush – 61 Litres
- > Powered by roof mounted solar panels with generator back up

Value Proposition

| | | |
|--|---|---|
|  Reduced generator service cost |  Reduced fuel costs up to 99% |  CO2 emission savings up to 99% |
|  Low flush eco toilet - reduced water usage |  Waterless urinal trough - 100% reduction in water usage |  Low noise pollution |

Figures are for guidance only. For your own specific settings, contact Genquip for your bespoke value proposition.

complete system is backed up by an on-board super-silenced generator, which ensures that the most cost-effective and energy-efficient power supply is maintained, even when it is unmanned.

A prototype was delivered to a rental organisation for testing. After completing their tests, the unit was sent to the site. After six successful weeks on-site and with only minor adjustments required the Unisex Solar Hybrid Toilet was launched onto the open market.

The Unisex Solar Hybrid Toilet was immediately taken up by a major rail contractor. Rail contracting regulations have made it mandatory that toilet facilities have to be in very close proximity and sited at regular intervals. A mix of male and female workers was engaged in this project, making the Unisex Solar Hybrid Toilet ideally suited for both genders. It also alleviated the requirement to have

separate units (at additional costs and space) for male and female facilities.

In addition, this particular trackside project went through some remote and hard to access areas. As the Unisex Solar Hybrid Toilet requires less generator servicing, the contractor dispensed with the need to give regular and detailed instructions to the rental company where the generators were sited when they required servicing.

The large water storage and waste tanks also meant that any inconvenience caused by frequent emptying was kept to an absolute minimum.

The contractor also was appreciative of the fact that as the Unisex Solar Hybrid Toilet was principally powered by a combination of batter and solar power. This meant that they required less fuel to be stored on site. This also lessened the possibility of ground contamination when refuelling the generators.

As the project progressed, the Unisex Solar Hybrid Toilet needed to be re-sited. The contractor commented that units were easily moved by utilising their trailer systems, which were safely and easily attached via conveniently placed forklift pockets.

Although the Unisex Solar Hybrid Toilet is designed to provide quality welfare facilities for all types of construction assignments, Genquip Groundhog was delighted that the units were delivering what was needed for this highly regulated trackside project.

The project was entirely self-funded by Genquip-Groundhog from its sustainable development fund. The project was fully backed by the board of directors from both companies.

Genquip-Groundhog operates to ISO 9001 standards and is considered to be a market leader within the industry. They have successfully achieved Considerate Constructor Supplier status and are currently rated at 4 ½ stars.

They have also achieved UVDB Achilles registration. UVDB Achilles is the utility industry pre-qualification system used by the utility sector in the UK to manage risk within the supply chain and comply with EU regulations. Genquip Groundhog had to complete a pre-qualification questionnaire in order to become registered.

For the future, Genquip-Groundhog is committed to developing sustainable power for all its product range.



Specifications

- > Dimensions:
3655mm (L) x 2300mm (W)*
- > Dimensions including drawbar:
4920mm (L) x 2300mm (W)*
- > Unladen weight: **3,000kg***
- > Possible Gross weight: **3,500kg***

GOLDEN SQUARE SHOPPING CENTRE

RECYCLE YOUR HOUSEHOLD METAL WASTE AND EARN £££ FOR LOCAL SCHOOLS

AIM

The Earth's natural resources are under threat. It is estimated that sources of virgin metals could run out within a century, yet demand continues to increase. Educating children at an early age on the benefits of recycling can be a powerful tool for encouraging vital, long-term changes in behaviour.

World leading metal and plastic recycle company- EMR and Golden Square Shopping Centre in Warrington, joined forces to educate children and communities on the importance of recycling, whilst incentivising communities to recycle more.

Aims:

1. Educate young people and communities on the importance of recycling metal
2. Make the recycling of metal easier and more convenient
3. Generate much-needed funds for local schools

ACHIEVEMENTS

By visitors dropping off their metal at Golden Square, all material was recycled responsibly through EMR.

EMR's experience, vast capabilities, and commitment to environmental, social and governance, ensures that the material collected was recycled responsibly in the most efficient and environmentally friendly way.

By empowering local communities and inspiring younger generations through the programme,

makes positive and lasting contribution through engagement, collaboration, and measurable action.

Over the collection period, 6.5 tonnes of metal waste were collected, which equates to a 6.305* tonnes of CO2 saving, compared to using virgin ore.

This in turn has led to an initial contribution of circa £1000 to a local school.

Social media reach: 13,409

Social media engagements: 250

Website (Your visit page): 3,540

PR Reach: 112,000

As a pilot scheme the initial figures were always expected to be around this number.

The true achievement of this project is now looking at how we potentially roll this out across over 100 JLL shopping centres, benefitting 100s of schools and communities in the process.

(*figures calculated based on ferrous metal waste)



IN DETAIL

In February this year, EMR and Warrington's Golden Square Shopping Centre installed metal recycling bins in the centre's ground floor car park. Visitors were encouraged to drop off metal waste items, such as copper piping, pots and pans, food and drink cans, radiators, garden tools and more, for recycling during the shopping centre's opening hours.

Local Primary Schools were invited to sign up to receive resources designed to educate and inform pupils of the importance of recycling to save the Earth's natural resources, and to be entered into a prize draw to win the value of the material collected.

Bespoke artwork was designed to communicate the campaign to customers throughout the shopping centre, as well as the use of social and traditional media.

Why did we do it?

Metals are one of the few materials that can be recycled repeatedly without any loss of quality and recycling them helps prevent valuable resources going to landfill. Recycling metals can also save a significant amount of energy, carbon emissions and water compared to extracting them in their raw form from the ground.

Golden Square is at the heart of the community in Warrington. We are perfectly placed to both reach out to families to enrich the educational side of this project and are local enough for customers to drop off waste for recycling.

By developing a programme

that encourages communities to recycle metal waste responsibly, we are able to educate the younger generation about the value of metal through rewarding local schools with much needed cash.

What did it cost and where did the money come from?

The incentive was generated through the value of the metal collected. Not only does this ensure that the programme is sustainable (as funding isn't reliant on both organisations) it also incentivised the local community to recycle through the programme. The more metallic material recycled = the more funds would be available for local schools.

Branding and educational resource development was funded through EMR's CSR programme- Young Futures Reimagined. To ensure schools received the full value of the metal collected, EMR's funding covered the logistic costs of the collected metal from the shopping centre.



Who and what benefited?

- Younger children received education on the importance of [metal] recycling
- Local schools received much needed cash
- Metal recycled responsibly

Longer term benefits?

Educating children at an early age on the benefits of recycling can be a powerful tool for encouraging vital, long-term changes in behaviour.

Was there anything innovative about the project?

A recent research revealed that 15.5% of consumers would be encouraged to recycle more if there were incentives for recycling. Therefore, to incentivise consumers, the value of the metal collected would be donated to local schools. By dropping off unwanted metal items, visitors were not only helping the planet but also doing their bit for the local community as well.

What did you learn from the project and are you planning any further development?

- Communication to the consumer is key to something like this as we attempt to re-educate and change customers habits. Ensuring all partners are aligned on this from the start and all opportunities are taken to talk to the customer is vital.
- Being adaptable has been a huge lesson learned as Covid19 hit. The project continued but various measures were put in place to ensure safety.
- Lessons learnt will be used to develop a national roll out

The scheme has been developed in response to the 'Waste to Wealth Initiative' by Business in the Community- The Prince's Responsible Business Network. EMR and JLL are two of seven Waste

to Wealth Champions committed to identifying challenges and developing innovative solutions to avoid catastrophic climate change and restore the health of our environment.

Golden Square Shopping Centre Director, Ian Cox said: "As a shopping destination that sits at the heart of the town, it's our duty to the community to ensure we are doing our bit to help make Warrington a more sustainable place to live. We are thrilled to launch such a worthwhile scheme. Recycling is a huge part of our ongoing commitment to improving the local environment and this is the perfect project in which to work with our shoppers to achieve this.

"The added benefit of collecting metal is the fact that we can also generate much-needed funds for local schools, as well as providing a wonderful opportunity in which to inform the younger members of our town how important it is to recycle and how everyone can do their bit."

GPS MARINE CONTRACTORS

GREENHOUSE GAS EMISSIONS SAVINGS ON THAMES TIDEWAY TUNNEL

AIM

The Northern Line Extension (NLE) project was awarded by Transport for London in 2015 to Ferrovial Agroman-Laing O'Rourke Joint Venture (FLO). The contract consists of two new underground stations at Battersea and Nine Elms, shafts at Kennington Green and Kennington Park, plus 2 no. 3.2Km length tunnels (which extend from Kennington to Battersea Power Station via Nine Elms). This created a huge amount of excavated material that the project sought to find a beneficial reuse site that could be accessed from the River Thames.

The FLO JV sub-contracted GPS Marine Contractors (GPS) to remove naturally occurring and inert materials from the contract using tugs and barges on the River Thames to a suitable beneficial reuse site. The excavated material disposal contract was completed in January 2018.

To maximise the amount of material that could be transported in a single journey GPS provided the largest feasible barges of 1750 tonnes capacity to

the contract (previous contracts has used barges with 1000 tonnes capacity). The barges were loaded from the Battersea Power Station jetty using a conveyor and telestacker system. GPS personnel were responsible for the management of the jetty and the optimisation of barge loads to suit the tidal constraints.

ACHIEVEMENTS

To maximise the amount of material that could be transported by barge, FLO sought the innovative solution of creating a waste transfer station at the Battersea site. This permitted facility would allow material to be transported from the other Northern Line extension sites (Nine Elms and Kennington Green and Kennington Park) to Battersea and also be loaded onto the barges. As far as we are aware it is the first time that a construction project has applied to do this and after many months of negotiations the permit was eventually granted, (following a site visit from the CEO of the Environment Agency). Gaining and holding a Waste Transfer Permit introduces more risks and responsibilities for the permit holder

(FLO), so the commitment shown in seeking this is considerable. By having the permit in place, the project sent an extra 120,000T of material via barge rather than road.

GPS managed the loading and unloading of their barges that transported a total of 845,229 tonnes from Battersea to Goshems Farm. This figure was achieved by a total of 701 barge movements with an average load of 1206 tonnes per barge achieved.

Figure 3-2: GPS barge removing excavated spoil from the NLE scheme



- Key benefits:**
1. A carbon reduction of 2,600 tonnes compared to conventional lorry movements. *information provided by M.E. Contractor*
 2. 701 return accident free barge movements.
 3. Removal of 90,000 lorry movements related to waste removal.
 4. Approximately 2,347,856 miles on public roads mitigated.
 5. Reduced road wear and traffic congestion.
 6. Improved kerbside air quality due to reduction in vehicle journeys.

Figure 3-1: Northern Line Extension (Kennington to Battersea)



IN DETAIL

The construction of the Northern Line Extension has involved extensive excavation and has therefore generated a huge amount of material that cannot be reused directly within the project. It was clear early-on that there were no suitable options for reusing this material locally, so the solution was to send the material to be used at site 30 miles away in Essex that needed clean earth to build over a Victorian landfill and restore it to arable land. This site (Goshems Farm) was adjacent to the River Thames and therefore well located to receiving material by river transport rather than road.

The NLE project utilised the existing jetty for Battersea Power Station to enable material to be loaded onto barges. However to connect the NLE Battersea site to the jetty a bespoke conveyor system had to be constructed that is 300m long, 6-7m high in the air and traverses above a third-party construction site. The conveyor route also skirted around the temporary mast that had been erected to draw the breeding peregrine falcons away from the

main Battersea power station structure.

Excavated material was stockpiled in a concreted bay at the Battersea Station site and loaded onto the barges via the conveyor system correspondingly with the tides of the river, which meant this operation took place both during the day and night. Each barge had, on average, the same capacity as 60 no. 8-wheeler lorries. Thus, each barge movement can be considered to have avoided 60 HGV movements through the busy streets of central London.

In total the use of tugs and barges on the River Thames for the NLE project has meant that 47,629 (return) HGV journeys (equivalent to 2,347,856 miles) were avoided from the streets of London. The environmental and societal benefits from this are numerous and include reducing air pollution from the busy streets of London, lessening the risk of accidents with pedestrians, cyclists and other vulnerable road users plus a substantial reduction in carbon emissions. FLO calculated that the use of the barges, to transport the material, rather than

Figure 3-3: The NLE team, showing the telestacker conveyor at work loading a barge



road transport avoided a total of 1,596,542 HGV left turns, which are considered highest risk in terms of collisions with cyclists.

The tug masters on this contract also used the tidal flows to reduce fuel use (they went with the tidal flow and did not push or pull barges against the tide). This method of utilising the natural power of the River Thames was a major factor in saving fuel. Fuel savings and emissions were further enhanced by the use of experienced tug masters who have local knowledge of the River Thames. The use of barges is estimated to have saved over 2,600 Tonnes of carbon emissions compared to using HGVs, which is the equivalent to 326 UK households' annual carbon emissions or 412 flights around the world!

Air quality is a key issue in cities such as London and utilising the River Thames as a means of transport avoids HGVs releasing noxious emissions into the densely populated streets. In fact water transport is recognised as one of the most sustainable modes and The Mayor's London Plan goal is ensure London's waterways contribute to a sustainable future. By securing a waste transfer station permit and taking advantage of the near river location of the Battersea site, the NLE was able to significantly contribute to the Mayor's ambitions.

The River Thames is a major transport artery to central London with numerous users including passenger ferries, pleasure craft, commercial tug and barge transportation operations (transporting London's household waste and aggregates for construction). GPS liaised with FLO JV, Port of London Authority and all other river users to ensure their River Transport Management Plan (RTMP) reflected all stakeholder requirements. The RTMP was augmented by a Passage Plan for each tug and barge movement. Any near misses or operational issues were reported back to the GPS team and if required the RTMP was amended along with additional information added to the Passage Plans.

The funding for the NLE was generated by TfL from Capital Grants provided by the GLA and financed

from business rates plus developer's contributions raised by Wandsworth and Lambeth boroughs. The use of the barges to transport waste represented good value for money when compared to the use of HGVs.

Innovation and moving forward

GPS Marine have recently been sub-contracted to remove and dispose of all the suitable excavated material from the Thames Tideway Tunnel Central (TTT) contract. The contract has been awarded to FLO JV by Thames Water and GPS are required to provide tugs and barges to transport and dispose of approximately 1,000,000 tonnes of excavated material.

GPS have decided to further reduce their tugs fuel use and carbon emissions by the commissioning of a new hybrid tug. The new tug will be capable of running for 12 hours at 100% on batteries only and will be fitted with back-up generators which will be gas powered.

The new tug will be capable of pushing two number barges each loaded to 1500 tonnes. This could halve the number of journeys required to remove large quantities of materials as the existing tugs push or pull one barge.

GPS are convinced that with the upcoming Silvertown Tunnels, Lower Thames Crossing and Crossrail 2 contracts, requiring huge volumes of excavate material to be transported and disposed using the River Thames, that they will be in the forefront of future sustainable river transport provision.

GREEN MOTION

GREEN MOTION'S GREEN HEART

AIM

Green Motion's objective is simple; to offer customers the choice to rent vehicles from a company who is genuinely concerned about their impact on the environment. The Green Motion model is unique as it does not charge a premium to go green, educating customers that they do not have to compromise on cost or comfort to make greener choices. We also concentrate on overall environmental and sustainable efforts such as reducing our energy use, minimising water consumption, effective recycling and the employment of sustainable / ecological materials throughout our business platform.

CO2 EMISSIONS

Green Motion works with the world's leading motor manufacturers in order to source and operate the latest developments in eco automotive technologies.

Green Motion is considered to be the only legitimate offering in the environmental car rental sector with us having the lowest CO2 fleet with a large selection of environmentally focused vehicles including hybrid, plug-in hybrid, range extender and full electric.

Our objective is to ensure that Green Motion operate and promote the lowest CO2 emitting

fleet within a given region / country. From a global perspective, around 35% of our fleet is made up of hybrid or electric models and our ultimate mission is to deliver the world's first and only zero emission fleet.

Environmental Commitment



Green Motion's mission is to remain at the forefront and retain our position as the "green" vehicle rental company. Throughout its countries of operation, Green Motion abides by an all encompassing and evolving environmental strategy embracing new automotive technologies and the latest eco ideas. Each franchise is required to support and adhere to Green Motion's environmental strategy ensuring that we continue our quest to be eco sensitive across all of our business platforms.

Green Heart Fee

Green Motion is highly committed in the development of its corporate policy that considers the environment as a valuable resource which should be protected. In support of our continued sustainability Green Motion offers its corporate and leasing customers the opportunity to pledge a donation based on each rental contract known as the Green Heart Fee. Donations collected are passed directly to the Costa Rican Ministry of Environment where the monies are invested in sustainable projects and the reforestation of the Costa Rican rainforest.



With a fleet size of approximately 37,000 internationally and 4,600 in the UK, each franchised location must adhere to strict guidelines for the rental vehicles they contain on their fleet.

Green Motion is proud to have the greenest vehicle rental fleet in the world with our collective vehicle emissions standing at sub 93g/km which is more than 35g/km lower than our nearest competitors.

Prime examples of Green Motion franchisees fully embracing our CO2 emissions philosophy is Green Motion Martinique and Guadeloupe, who operate the cleanest BMW and mini fleet, including the new electric mini and the new BMW X5 edrive hybrid; Green Motion UK also added a brand new fleet of VW ID.3 full electric to their portfolio for 2021, embracing the very latest zero emission technology and expanding their already market-leading low-emission offering.

ENERGY USE

Power supply – where appropriate, each location purchases their electricity supply from an accredited green energy supplier. Our international head offices employ 100% green energy (via Green Energy UK who harnesses their energy through plants, animals, water and wind) which further reduces our carbon emissions.

Lighting – each location features low energy LED light fittings, dramatically reducing our power consumption. Where appropriate, locations have also installed passive sensors to automatically turn lights on / off, reducing energy use when areas are not occupied.

WATER CONSUMPTION

Each of our locations are focused on reducing their water consumption by the use of innovative valeting technologies including steam cleaning, water capture & recycling and waterless cleaning

processes (which is used by our UK locations as well as our Finnish franchisee).

Several Green Motion franchisees including Finland, the Netherlands, Florida and Morocco invested in machines which enable them to clean their vehicles purely with steam. This has allowed them to save up to 90% on their regular water usage, saving more than 5 million litres per year.

RECYCLING / SUSTAINABLE MATERIALS

Valeting chemicals and cleaning materials – each Green Motion location utilises environmentally friendly / bio-degradable chemicals – from washing the dishes to washing our cars, all of the products we use are safe for our planet.

Recycle zones – all of our locations feature a recycle zone, promoting recycling best practice not only with our staff but also with our customers.

Stationery – each Green Motion location utilises business / marketing stationery which is made from either recycled or sustainable materials. In addition, Green Motion's rental software and new app enables customers to have a paper-free rental experience as the rental agreement is captured electronically.

Flooring – all of the flooring material employed at our locations is recycled from used tyres or reclaimed timber. Our head office has also installed recycled flooring.

Shop-fitting materials – where appropriate, each Green Motion location utilises materials for shop-fitting and signage which are sourced from environmental suppliers, utilising sustainable materials and products.

LEADERS IN THE ENVIRONMENT

At Green Motion's annual Awards ceremony held during our International Conference, a Leaders in

the Environment Award is presented every year. At our last Conference this Award was won by Green Motion Morocco, who focused on strengthening their environmental responsibility by reducing emissions, managing waste efficiently and making employees aware of the importance of eco-responsible behaviour.

Green Motion Morocco is continuously improving the energy efficiency of its sites and fleet; it also uses renewable energies and the latest technologies to minimize the consumption of electricity. It regularly renews its fleet, introducing less polluting and more fuel-efficient vehicles.

In addition, Green Motion Morocco supports the installation of electric terminals in Morocco in Partnership with their highway association. They have 15 charging stations for electric vehicles located in 10 Total service stations. This franchisee was the first to launch hybrid cars for hire in Morocco, in partnership with Toyota.

This award has also been presented to Green Motion Rome who has the greenest car rental fleet in Italy, including Smart For-two Electric. They introduced their fleet of Smart For-Four Electrics in 2019 and operate with average CO2 emissions of 95g/km.

Green Motion Costa Rica has received their Sustainable Tourism Certification and has organised volunteer activities throughout the year, totalling 444 hours supporting environmental initiatives such as cleaning natural protected areas, recycling campaigns and supporting communities.

Presenting our franchisees with Awards such as 'Leaders in the Environment' really helps to reinforce the ethos and give them pride in themselves, the Green Motion brand, and what it stands for.

SOCIAL IMPACT

Our global network of franchisees are all true ambassadors for the green environmental

movement. The master country franchisee for Green Motion Costa Rica launched the Green Heart Fee initiative in 2013 which has now been adopted across the entire network. The Green Heart fee is charged to customers when they make a booking with Green Motion (they do have the option to opt out if they wish) which is then donated directly to the Costa Rican government reforestation and conservation programs via FONAFIFO. This initiative allows Green Motion customers to reduce their CO2 footprint by offsetting the emissions produced while driving one of our vehicles.

Tens of thousands of dollars have been donated through the Green Heart initiative resulting in the planting of thousands of trees along with other ecological initiatives. Nearly 52% of all direct to brand Green Motion customers choose to contribute to our carbon offset initiatives when booking car rental.

Awards – Green Motion is proud to be an award winning car hire company, winning several environmental contribution awards such as GreenFleet's 'Rental Car Company of the Year' 7 years in a row (2009 – 2016), Energy Saving Trust's 'Fleet Hero Award' in 2011, the 'Environmental Rental Company of the Year' for the Institute of Transport Management in 2011, and Green Apple Awards in 2015, 2016, 2017, 2018 and 2019 as well as becoming Green World Ambassadors in 2016, 2017, 2018, 2019 and 2020. Green Motion also won an International Corporate Social Responsibility Excellence Award in 2020.

We are incredibly proud that our Founder & CEO Richard Lowden was also named a Finalist for the 'Lockdown Leader' Award in the 2020/21 SME Business Awards for his swift, decisive, innovative and sustainable response to the pandemic.

Green Motion International was also awarded the prestigious Green Tourism Silver Award in 2019, and is currently working towards achieving Gold status. Initiatives such as analysing waste and

recycling processes, as well as water use reduction by installing new efficient toilets were introduced in accordance with the Silver Award criteria.

THE FUTURE

Green Motion is now in its 13th year of operation and has achieved phenomenal success in creating a completely new brand sector within the daily rental industry with many of our industry partners and competitors starting to introduce their own greener fleet. Green Motion was genuinely the market disrupter that started the total change towards greener vehicle rental.

Despite 2020 being the toughest year in Green Motion's history, not just for the car rental sector but the entire travel and tourism industry, our franchisees have continued to thrive, with us expanding into new locations, launching new franchises, and being the very first international car rental brand to put into place and roll out across our international network our COVID-19 Shield Customer & Staff Safety Procedures, for the protection and well being of all of our valued customers and colleagues worldwide.

We will continue to support the regeneration of the travel and car rental industries, using our position as leaders in our sector to reinforce our green message for sustainable development and progress.



We are redefining car & van rental...

Low cost and lower
CO₂ car & van rental

Hiring a car from Green Motion gives each and every customer, including leisure travellers and business users, the opportunity to play their part in reducing CO₂ emissions relating to vehicle rental while enjoying the highest levels of car hire service at industry leading rates.

For more information, please visit
greenmotion.com



Green Motion International Car and Van Rental is proud to be named a Green World Ambassador by the Green Organisation for 2016, 2017, 2018 & 2019.



Have you got our app? [Download now](#)

THE GREEN ANGELS

LET THERE BE LIGHT – THE POWER OF THE GREEN POOP BAG

AIM

The aim of our project is to reduce pollution and plastic waste on our planet and also to use pet waste to create renewable energy.

The Green Angels company has developed a compostable poo bag which is made from a blend of corn starch and sugar (waste) and fully degrades in a natural environment within 3-6 months causing zero harm to our nature. This means zero plastic waste as home composting of our certified bags, including the “poo”, can be turned into a natural fertilizer for flower beds.

This is not the only mission of our compostable bags. As already seen in Canada, with the right partner and facilities we could turn the pet waste into a biogas which could be collected by a generator to produce energy. With this innovation we could hugely reduce the amount of unnecessary plastic being buried in a landfill without purpose, polluting our environment and killing the wildlife.

ACHIEVEMENTS

Our company was born only 6 months ago and we have already lowered the number of ordinary plastic bags by almost 89,000 in

the UK. We not only supply but also educate, give free samples and meet with the public to explain our aims and what difference it could make to switch to our compostable bags. We have also learned that pet owners are often confused and unsure which bags are the best to use for our environment.



There are so many on the market which may “hide” under the biodegradable/eco-friendly description (due to this term not being legally defined) and people are ending up with OXO/EXO bags with chemical additives that degrade into microplastics.

Another step forward has been made by approaching our local councils to ask for their support as some of them give away bags for free or have bag dispensers in local parks and gardens. With their help and encouragement, we want to reach out even further and we truly believe that responsible dog/cat owners will support our mission.

IN DETAIL

As a minimalist and environmentalist, I try to live my life with the least impact on our environment. With my “less is more” mind I always look for options where we can reuse, repair, recycle, rot or re-new without harming our planet and nature. I was fortunate to be a mum to a most amazing German Shepherd called Ebi for 13 years. She was the kindest and funniest companion I ever had but also the biggest poo machine I could ever have imagined. My pockets were always full of poo bags because I used more than one for every walk and then it hit me: we have over 8.5 million registered dogs in the UK, which may use two or three bags every day! At that time most of us just reached for the basic plastic bag to pick up the “gift” “and put it (in most cases) into the general waste bin at home.

I could not stop thinking about it and decided to do some research.

I found out that these bags were buried with rest of our waste in landfill forever. They would never degrade but instead would create a hazard to our planet polluting our soil, water and killing our wildlife. I thought to myself, what could we do about it?

I decided to search for more eco options and came across a food waste compostable bag. That was a good start. Speaking to various pet owners I gathered their requirements and suggestions and with my creative mind came up with a Green Poop Bag, which is made from natural ingredients as

AIB-VINCOTTE International s.a. / n.v.
SAFETY, QUALITY, ENVIRONMENT
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E-Mail: okcompost@vincotte.be

HOME OK compost VINCOTTE

CERTIFICATE FOR AWARDING AND USE OF THE 'OK COMPOST HOME' CONFORMITY MARK

No. O 16-1976-A

Issued by AIB-VINCOTTE International

For the product(s) described hereafter:

| | |
|--|---|
| Product Domain: | Home Compostable Products |
| Product Group: | Finished products |
| Product Family: | Bags / Sack trade |
| Product Type: | Bags for collection of biodegradable refuse |
| Trade mark: | Shopping bags |
| Product description / Particularities: | <p>XHB10</p> <p>Maximum film thickness: 65 µm</p> <p>Colour of the film of the bag: white translucent or light green</p> <p>Colour of the printing: various colours</p> |

Conformity examination applied for by:

Dongguan Xinkai Environment-Friendly Material Co., Ltd.
No.17, Shenji Road, Dalu Industrial Area, Houjie Town
523657 - Dongguan City, Guangdong Province
China

Criteria for certification:

- AIB Test Program with reference: OK 2, edition D 'Home compostability of products'
- NF T 51-400 (11-2011): «Plastics - Specifications for plastics suitable for home composting»

Validity of the certificate: From 06 July 2016 till 06 July 2021

Conclusions of the examination: The products comply with the above mentioned certification criteria, as confirmed by the test report of Aib sa 09 / 00402836 / 6-06-2016.

Applicable certification systems: Type examination followed by supervision through verification tests on samples from the distributor's stock or of the market.
The conformity of the product is guaranteed by the procedures for awarding and use of the 'OK compost HOME' conformity mark. This only applies for specimen bearing the 'OK compost HOME' mark.

This certificate is issued in English

Brussels, 06 July 2016

C. WIG
Contract Manager

Ph. DEWOLFS
President of the Committee

Annex 1

06-CERT006-A

corn starch and sugar blend, home compostable and practical for the poo picking job. I took the first step to reduce the waste/plastic pollution on our planet, cleared my savings account investing £20,000 into product design and development, branding, webpage, selling platform, packaging, manufacturing, shipping and advertising, social media, phew I am sure I still forgot a few more and took on board my sister Silvie as a partner.

Our business has now been running for 6 months and we already have returning customers who gave us top rating for our product and cannot praise it enough which makes us feel that we are already making a difference to the environment. We are still at the beginning of our journey but can proudly say we have saved almost 89,000 pieces of general plastic bags and counting.

We are pleasantly surprised how many pet owners are nowadays reaching for more eco options and turning to a more sustainable lifestyle. We can tell mother nature is grateful for it. It is not only pet owners using our compostable poop bags but we are also getting more orders from pet businesses such as dog walkers, pet/eco shops, boarding kennels, groomers and even vets. We are so happy to see other organisations benefiting from our product as they find its features very helpful as they are leak proof, have handles, are super strong, come in various sizes and a great camouflage colour (as not everyone needs to see the contents).

And this is not our final destination, we want to do more and better for our environment, our future and generations to come. How can we re-use or re-purpose pet waste? Well our bags already allow home composting (the added innovative benefit of our bags is degradability in the UK climate) and we know that a lot of keen gardeners have already chosen this option and create their own compost using their pet's waste. Apparently, their flower beds are loving it.

It has been a full-on learning curve, managing the A-Z of our business and the needs of our customers, keeping our mission and vision in mind, but we are not afraid to roll into the next level. We want to expand our project using the pet waste for renewable energy. We were inspired by a similar project in Canada and truly believe that with the right team/partner and facilities we could produce our own power to supply households countrywide.

And who is behind all this? My name is Denise and this project means the world to me, I am the brain, heart and soul of it. I spend as much time as I can in nature, even camping on my own or sleeping in a cave waking up to sunrise and bird song and walking up and down the mountains to enjoy the views, peace, music of nature and the fresh air. I have a partner "in crime" my sister Silvie who is the engine of this project. We will continue "fighting" for a healthier future for us and our planet but we always do it ethically, wisely, mindfully and non-violently as we believe that violence does not change anything and only creates another.

IC CESME MARINA

IC CESME MARINA ENVIRONMENTAL PROJECTS

AIM

Çeşme Marina supports sustainable life and contributes to natural life with many environmentally focused projects which have been carried out.

For this purpose, since 2019, with the cooperation of Çeşme Coast Guard Command and Çeşme District Directorate of Agriculture, Çeşme Marina has helped return to its natural environment more than 2,500 illegally caught trepangs. In addition to the services it offers with its marina identity, it also prioritizes its environmentalist identity in the same parallel.

Trepangs, which were caught unauthorized during prohibited periods, are being brought to Çeşme Marina with the cooperation of İzmir Provincial Directorate of Agriculture and Çeşme District Directorate of Agriculture, where they were ensured to return to their natural habitats.

Çeşme Marina supports the squid nest project initiated by the Izmir Metropolitan Municipality by preparing squid nests and releasing them into the

marine water in cooperation with the Derin Doğa Diving Center.

With this project, Çeşme Marina aims to increase the diversity of the water within the borders of it and the sea water around it.

Another application carried out with the aim of increasing the aquatic species population and also supporting sensitive deep water creatures and the ecology of the region is the artificial reef project.

ACHIEVEMENTS

With the Squid Nests project, Çeşme Marina supports the dangerously falling squid in the region, and at the same time contribute to sea tourism by creating a perfect view for divers at diving points.

Çeşme Marina General Manager Can Akaltan :“So far, we have brought together 50 homes with the sea and we will build 30 additional nests in 2021.” he explains.

Erdoğan Ergun, from the Deep Nature Diving Center comments: “We saw that squids, which are known to lay eggs in cave mouths and ceilings in nature, lay eggs in boat chains, ropes and similar places, and we have submerged similar structures. We got a positive response right away and the squids are still laying eggs in the open sea at the locations we have identified.”

The Çeşme Marina diving team has observed that the trepangs left in the marina waters both continue their lives by adapting to the environment around them and develop accordingly. Çeşme Marina expects to get results in the longer term for the artificial reef project, which is created by combining scrap iron from chemicals.



As of today, it supports the formation of sensitive organisms in marina waters and it is observed with dives that it diversifies the ecology.

IN DETAIL

Çeşme Marina in Turkey offers a new approach to caring for the marine environment.

The marine environment supplies many ecosystems that support biodiversity in coastal and open ocean habitats. Marine ecosystems provide many resources that are beneficial to society and a significant proportion of the world's population depends intimately on the oceans and coasts for survival and well-being.

The pressure on marine ecosystems and the resources they provide is increasing as threats introduced by land-use change, overfishing, climate change, the invasion of non-native species and other impacts of anthropogenic activities affect biodiversity.



As environmental conditions change, species need to evolve and adapt to these changing conditions. Healthy marine ecosystems are important for society since they provide services including food security,

feed for livestock, raw materials for medicines, building materials from coral rock and sand, and natural defences against hazards such as coastal erosion and inundation.

It is for this reason that in 2016 Can Akaltan – General Marina Manager, committed to working with the stakeholders to spearhead a number of marine ecosystem projects to further encourage marine diversity and ecosystems in the marina and encourage other marinas in Turkey and around the world to follow suit.

Can Akaltan comments, “Everyone is responsible for helping protect the environment around us.

In previous years Çeşme Marina has concentrated in supporting cultural and heritage community projects, but now the focus for us it to promote water cleanliness and offer some effort and research for other marinas to hopefully follow.” Can continues, “I am fascinated by the projects we have carried out, in partnership with Çeşme District Directorate of Agriculture, Derin Doğa Diving Centre.

We have worked together for nearly 5 years in creating special ecosystem projects to help the water quality. We are blessed to live and work in one of the most beautiful destinations in Turkey – we sincerely hope to keep it this way.”

Çeşme Marina aims to get rid of the silt collected in the marina waters as a result of the overflow of the creek around the marina, aims to increase the quality of the marina water with the organic ‘vacuum cleaner’ task undertaken by the trepangs. The project includes the delivery of trepangs

caught as a result of unauthorized fishing to the marina and the distribution of these creatures to the marina waters with the help of a boat and a sailor team.

Squid are important to the ecosystem as both predator and prey, they contribute to the ecosystem by acting as keystone species in marine food webs providing food for other creatures such as sharks, seals, whales, dolphins, seabirds, deep-sea fish, and other squid.

Squid and artificial reef projects have enabled formations that support the principle of environmental sustainability with low costs and the transformation of the scrap metals we have.

In this way, both our marina and the institutions with which we cooperate significantly supported the increase of awareness on the subject.

- At least 8.750 TL worth poaching trepangs were received from Çeşme District Agriculture.
- Materials used for Squid Nest construction : 500 TL per nest
- Materials used in artificial reef construction : we transform the unused metal materials into artificial reef.
- Marina staff time : Each time we receive poaching trepangs, our marine team released them into the marina water within 30 minutes in their shift. At least 2.500 trepangs came to life.

In every 2-3 month period, new squids are formed and artificial reef is a home for many underwater creatures. With the projects we carried out together, The Diving Centre has gained new diving points.

Our other stakeholder, Çeşme District Directorate of Agriculture, ensured the vital continuity of the trepangs caught as a result of poaching in the waters of our marina. In addition to these, Çeşme Marina not only realised practices that matched its environmental identity, but also increased the quality of marina water naturally.

In the long term, Çeşme Marina wishes to achieve maximum usefulness in its area by implementing projects aimed at environmental sustainability,

supporting ecological life and increasing the underwater population, both within itself and within its reach.

Increasing awareness around marine life and aquatic life that is important for us all to better understand and learn. The teachings and research from the Dokuz Eylül University is helping provide resources to students investigating marine and environmental science.

It is an innovative idea that a marina in Turkey is actively encouraging the trepangs to breed and survive to help nurture the marine ecosystems, ensuring environmental sustainability and better water quality in our marina.

Our environmental projects obtain positive results, and we would like for our work to set an example for other marinas to follow, plus drawing attention to the benefits that a small creatures such as trepangs can bring.



The 'ideas' are innovative in that we follow the development of our projects setting a good example for best environmental practices in marinas. The three projects Çeşme Marina has spearheaded has further advanced the learnings and understanding of marine life in the region.

Working with the University so closely has enabled a grassroots level of learning to students who are interested in marine and environmental factors.

Çeşme Marina believes that these projects can be further implemented around the world, and actively encourages other marinas to copy and follow suit. The marinas might implement similar practices that will compensate at least some of the damage caused by human beings to the environment with the appropriate space and minimum budget they will allocate underwater.

With our squid nest, artificial reef and trepang projects, we have observed how easily nature can adapt to change and transformation in a positive sense. General Marina Manager Can Akaltan comments, “Although we begin to experience and feel many negative by the environmental effects, especially global warming, after many years, I can see light at the end of the tunnel and I am so pleased Çeşme Marina can be apart of this process.”

In 2022, Çeşme Marina is planning to add a seagrass project to improve the underwater vitality to the projects we have mentioned, including applicable recycling, zero waste at our marina borders, and in the near future.

THE INCREDIBLE HUSK INTERNATIONAL GROUP

THE INCREDIBLE HUSK

AIM

The Incredible Husk International Group (IHIG) was formed to develop new and innovative biodegradable material to replace harmful plastic and bio-plastic material.

Plastic is destroying flora and fauna on land and in water with almost 9 million tons of it entering our oceans each year – ultimately, if we do not protect our planet and its ecosystem, much of the life on our planet will not survive.

IHIG Partnerships - Designs - Develops and Delivers

IHIG's experience and expertise in waste materials and our developing partnerships and collaboration with material sector specialists and environmental groups mean that we are building on our sector expertise, becoming the subject matter expert and 'go-to' group on what can be done with waste materials around the world.



We take the waste from crops, currently dumped, burnt, or buried and turn them into new biodegradable commercial materials, which can be used to produce a huge variety of products. At the end of products' useful life, they can be used as fertiliser (see IHIG Circle of life cycle)



IN DETAIL

Currently, less than 9% of plastic gets recycled, much of the rest pollutes the environment or, sits in landfills where it can take up to 500 years to decompose whilst leaching releasing harmful toxic PAH chemicals into the atmosphere, poisoning the ecosystem and contributing to the many cancers that are killing humans and animals.

The difficulties and expense of repurposing waste plastic make it uncompetitive because producing new plastic is so cheap

There is another way – The Incredible Husk International Group was formed to deliver innovative new biodegradable material solutions and replace this harmful plastic and bioplastics and reduce climate change.

Project Achievements:

- Obtained a world IP
- Developed a new 100% biodegradable husk compressed material recipe
- Developed a new 100% biodegradable husk injection moulding material recipe.
- Developed a new mixed recycled plastic and biodegradable husk material recipe

Key benefits

- Natural material
- Offset CO2 by upcycling wasted husk material to avoid burning
- Low energy consumption compared with plastic and metal
- Low water consumption compared with plastic and metal
- Only natural substance washed into the drainage system
- Anti-bacterial - does not grow mould the alignment of the material molecules does-not trap water.
- Biodegradable – naturally composts.
- Becomes a fertilizer at the end of product life to give to farmers to grow new crops.

| IHIG ECO Material Comparison Chart | | | | | | | | |
|------------------------------------|-------------|---------------|-----------------------|------------|------------------|-------------|------------------------|---------------|
| Material | Zero Carbon | Natural Waste | Natural Biodegradable | Recyclable | Renewable Source | Compostable | End of Life Fertiliser | Contain PAH's |
| IHIG ECO | YES | YES | YES | YES | YES | YES | YES | NO |
| PLA - Bio Plastic | NO | NO | YES | YES | YES | YES | NO | NO |
| PET - Bio Plastic | NO | NO | NO | YES | NO | NO | NO | YES |
| Plastic | NO | NO | NO | YES | NO | NO | NO | YES |
| Wood | NO | NO | YES | YES | YES | NO | NO | NO |
| Paper | NO | NO | YES | YES | YES | YES | NO | NO |
| Cardboard | NO | NO | YES | YES | YES | YES | NO | NO |
| Metal | NO | NO | NO | YES | NO | NO | NO | NO |
| Glass | NO | NO | NO | YES | NO | NO | NO | NO |

What are the limitations of what can be produced?
This new material has the flexibility, properties and tolerances to be used across a huge range of markets and products.

Now, here's the clever bit when the product reaches the end of its useful life? Just break it up and use it as fertiliser– it really does increase crop yields!

IHIG Biodegradable Materials Recipes and Product Testing

All biodegradable Materials Recipes and Products have been tested and are compliant with the following requirements listed below:



LEADING THE FUTURE

Incredible materials that combat plastic waste pollution and protect the planet from climate change

Incredible Husk™ International has one mission: to respect and protect this planet, its inhabitants and its natural resources.

We are a plant-fibre material technology research and development company dedicated to enabling the shift to a sustainable future.

Our process converts husk into the world's only truly biodegradable in nature alternative to unsustainable materials, including products traditionally made from wood, steel, ceramic, plastics and bioplastics.

We don't need to use any toxic chemicals or harmful processing and our material is zero carbon. We simply enable industries to decarbonise and actively protect ecosystems, improve health and combat climate change.



Incredible materials for a better future

From the beginning to the end of their lifecycle, Incredible Husk™ material — and the people who develop and make the products — play an active role in tackling plastic pollution, decarbonising industries and reducing climate change.

What's more, we're developing ways to blend our base materials with waste plastics to alternative construction materials.

So, as well as providing an alternative to plastic, we're actively finding ways to clean up existing plastic pollution.



HELPING OTHERS
TO HELP
THE ENVIRONMENT

How do we do it?

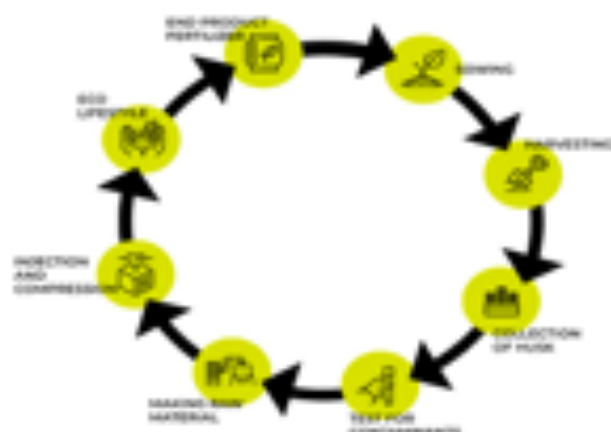
Husk is a plentiful and sustainable resource that can be found all over the world, and therefore requires no additional energy, resources or land to produce.

Our proprietary trade secret binders contain no harmful chemicals or synthetic polymers and biodegrade in the natural environment. When crushed or broken Incredible Husk becomes an organic fertiliser to grow new crops. This is a true circular economy. Products made with Incredible Husk are safe for people, harmless to the world's ecosystems, feeding new plants and protecting people's health.

This means that when products made with Incredible Husk reach the end of life – whether that be several hours for single use items, or several years – they are safe for disposal into drains, gardens, waterways and oceans or can be collected and simply crushed into organic fertiliser to grow new crops.

Reputation matters

We protect your reputation and provide assurance every step of the way with:



- End to end lifecycle technology applied during production.
- Trade secret IP that protects binders and manufacturing technology.
- BAMS AI and PMS software technology protects from cyber attacks on asset information and prevents cross contamination through deliberate or accidental means.
- Zero carbon material lifecycle guaranteed.

Performance matters

With Incredible Husk you don't need to compromise. We work with you to create the products your customers need, with the environmental credentials they expect.

Completes lifecycle as organic fertiliser

Biodegrades under natural conditions

No compromise on quality or performance

EU compliance for food contact

No toxic chemicals, PAHs or PLAs

Zero carbon lifecycle

Dishwasher and oven safe

Agricultural by-product = sustainable

Adapts to product specifications and elongation

Naturally antibacterial

No synthetic polymers, rubber resin or chemical treatment

Meets EU definition of plastic-free

Less pressure on the planet - and on you

In this past decade, the world has become increasingly focused on the imminent danger presented by global warming and climate change. That's placed global pressure on product designers, developers and manufacturers to reduce their impact on the environment.

That pressure is coming from governments, clients, and consumers. The bottom line is that to stay competitive, all of us must clean up our act.

We understand the pressure. We recognise the challenges it creates. We're here to help you meet them, and to create genuine partnerships that enable your transition to a more sustainable future.

Business support and funding advice

A partnership with Incredible Husk™ International helps you reduce your carbon footprint along the entire supply chain.

We help our certified, quality assured manufacturing partners to implement the switch to Incredible Husk™. We recruit waste management partners to help us recycle Incredible Husk™ products into fertiliser, as well as to help us tackle the problem of plastic waste.

If you want to start your R&D journey with Incredible Husk we will support you every step of the way by:

- Providing expertise to test, develop and refine your switch to sustainable material solutions.
- Funding support and guidance through our official grant partners.
- R&D tax advice and grant applications
- Developing your messaging and sharing your sustainability journey with the world through our communications expertise.
- Providing access to sustainability professionals, cutting edge academic outputs, legislative updates and in-house training.
- Ensuring you attain test results and the highest level certifications that demonstrate your products' environmental credentials.

Our partners - supporting your journey



Our credentials

We are winners of both the World Environmental Development Award and the World Environmental Sustainability Award.

We are proud to be Green World Ambassadors and it's something we reflect in everything we are, and everything we do. And it's something we expect our partners to reflect, too.

We believe the future lies in true collaboration between research, industry and sustainability. That's why we enter every partnership openly, transparently and with integrity.

We've achieved the highest level of testing to ensure we can prove every word we say. Incredible Husk's environmental and sustainability credentials are approved by officially recognised industry testing and accreditation bodies.

This means that manufacturers and brands can promote genuine environmental claims in complete confidence and in support of their social responsibility strategies and sustainability commitments.



Get involved

Green World Industry Ambassadors

Incredible Husk cannot do it alone, so along with The Green Organisation, we have set up our Green World Industry Ambassador Scheme.

These individuals will help to decarbonise their industries through collaboration and awareness raising. To become an Industry Ambassador you must agree to strict ethical guidelines before being appointed.

Green World Industry Ambassador: Construction

We are pleased to announce our first Green World Industry Ambassador is **Robert Candy** who represents the construction industry.

If you want to learn more about the work Robert is leading or would like to find out more about becoming an Industry Ambassador please get in touch on the email below.

Drop us a line on
info@incredible-husk.com
or visit our website www.incredible-husk.com

Work with us. Be part of our story.

INFOSYS

Annexure

Infosys Limited is global leader in next-generation digital services and consulting. Head quartered in India, we enable clients in 50 countries to navigate their digital transformation. With \$13.56 billion in revenue and nearly 260,000 employees and over 50 million sq.ft. of office spaces, our operational footprint spreads across many countries. Infosys has been a forerunner in the area sustainability and climate action as well.

While the pandemic resulted in a sudden and unforeseen impact globally, a greater crisis on hands is climate change - with rising global temperatures, deteriorating air quality and contamination of our water bodies. Globally, climate change is believed to claim more lives every year than all infectious diseases and is expected to cause severe social and economic damage in the near future. Climate change has been affecting everyone without differentiating between boundaries, sectors, or race. We understood these impacts of global warming early on.

Infosys also recognized the potential risks climate change posed to our business. These included risks to assets/property, loss of productivity, emerging or current regulations, changing client behavior or requirements or technology.

Like all other businesses, Infosys contributed to global CO2 emissions as well. Therefore, climate action at Infosys started as early as 2008, with an assessment of our carbon footprint and our early initiatives around resource efficiency to reduce our carbon footprint. Taking cognizance of our contribution to climate change, Infosys took an ambitious goal in 2011. We became the first IT company in the world to take a commitment to become carbon neutral at the UN, well before the Paris Agreement (2015).

HOW WE APPROACHED CARBON NEUTRALITY:

Strategy and Practices:

Infosys followed a structured data driven approach to understand its emission sources, and thereby meet the UN commitment. We first had to measure what we emit and then reduce those emissions internally.

Our main source of emissions within our boundary came from energy consumption. As a growing organization, our emissions outside our boundary mainly came from business travels, employee commute.

For emissions that remained, or were beyond the organization's control, we decided to offset emissions.

In 2008, Infosys a dedicated Green Initiatives team was set up, with the purpose of focusing on climate change and resource efficiency. With the management buy-in, the required oversight for driving carbon neutral goals were created at the Board level. The performances on the climate change risks and implementation of climate action strategies were tracked by the Risk management committee and the CSR committee respectively. At an operational level, this has been assigned to the COO and the CFO. Under the guidance of our COO, the EVP and Head of Sustainability drives projects to meet the goals related to climate action. The leadership remuneration is also linked to the performance against these goals. These goals are further cascaded to various business unit (BU) managers, who look after the identification, implementation, and monitoring of the projects. The business unit managers work in collaboration with the Corporate and location wise EHS - Facilities teams. This ensures that climate action is driven using top-down and bottom-up approach.

This year, Infosys established the Board level ESG committee, consisting of 3 independent directors driving focus on being a sustainable and socially responsible company.

Infosys approached the carbon neutrality using a three-pronged strategy. 1) Energy efficiency (EE): Reduce emissions, to the extent possible, through EE measures 2) Renewable energy (RE): Avoid emissions transition to clean renewable source and 3) Carbon offsets: Offset emissions that are beyond our control using community-based offsets

Program Funding:

The budget for the various projects under the carbon neutral program are reviewed by the BU Heads at regular intervals and then taken to the CFO and COO's office for approval for budget allocations. Dedicated budgets were set aside under the carbon neutral commitment made at the UN. The company's ESG vision announced in 2021, confirms commitment by the management for the allowing required funds is allocated for each category of our carbon neutral program for the next decade.

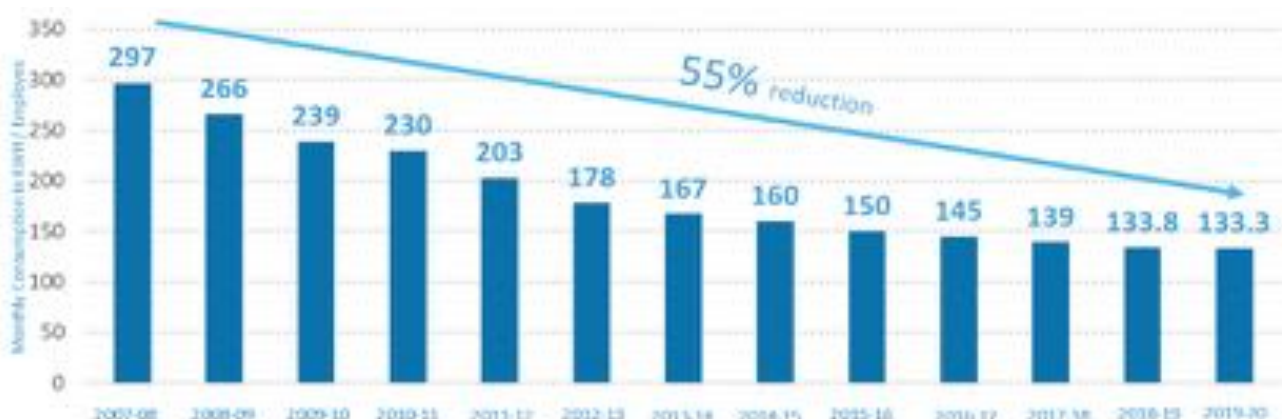
While Infosys has announced an internal carbon price (USD 14.25), the budgets continue to be allocated directly by the company.

Execution Excellence:

For our EE program, with a data-driven approach to energy efficiency, we invested heavily in building a command center that integrates all our campuses and businesses across India through a central energy management system. Today, over 30 million sq.ft. of office space located across India can be controlled/managed remotely by the command center. The command center is core to our EE program.

Use of technology has not only helped centrally control/manage these spaces but has also provided massive insights into identifying improvement areas as well as designing of new building more efficiently. The team identified several improvements in the lighting, UPS, HVAC, data center and façade areas. Interventions like a company-wide chiller revamp program and UPS replacement program helped us achieve significant energy savings. Through our retrofit programs alone, we were able to reduce over 33MW in connected load since 2008, and energy bills thereof.

In new building designing, Infosys used a collaborative approach with architects, design consultants, OEMs, building contractors, insisting on creating new highly efficient products and buildings. Infosys implemented some of the cutting edge and first of its kind projects (e.g.: Radiant cooling, retro-shades), which today have become



proven technologies India is adopting. This was possible by creating a platform for co-creation and collaboration with experts across areas and research institutes. Infosys has designed and built our new offices with an energy performance index (EPI) as low as 70 kWh/m²/year, among the lowest in the industry globally. Today, all our new buildings are constructed with the highest green rated certification (US LEED Platinum or equivalent).

Our EE efforts have resulted in over 2 billion units of energy saved since 2011. Our efforts in the energy efficiency space have resulted in reducing our per capita energy consumption by over 55% between 2008 and 2020.

For our RE program: we enabled smart monitoring for our solar plants, that now allows us real time monitoring of our plant's performance from the comfort of our offices. Today we have about 60MW solar PV installation (including rooftop and ground mount PV plants: a 6.6MW in Hyderabad and a 40 MW offsite solar plant in Sira, Karnataka).

We also ran a unique initiative/experiment, with different types of solar PV technologies to analyze the effects of different weather conditions on the performance of the PV technologies, like 1) Polycrystalline, Monocrystalline, 2) HIT 3) CSI and 4) Cd-Te films. We compared these on the same roof (under same conditions - orientations, capacity, etc.) that helped inform our future investments in RE. Infosys also became the first Indian signatory to the RE100 global campaign and is transitioning to renewable energy for all its electricity needs. More importantly, we also worked with the Government and / policymakers at State and National levels to enhance the renewable energy policies across multiple states.

Through a combination of EE and RE, Infosys was able to reduce its per capita scope 1+2 emissions in 2020, by over 70% against a 2008 baseline.

Energy efficiency and renewable energy together helped us manage our scope 2 emissions. Although

we have very little control over scope 3 emissions like business travel, employee commute, etc., we have an array of initiatives designed to reduce these emissions. Some of these include carpooling, corporate use of electric vehicles, use of bio-CNG buses for employee commute, installation of video conferencing facilities to reduce the travel requirements, etc.

Carbon Offset program: Despite our best efforts to reduce/avoid emissions within our boundaries, some scope 2 emissions remain. Additionally, emissions from sources like business travel, employee commute, etc., contribute to our scope 3 basket. Carbon offsets therefore are critical to our carbon neutrality strategy.

While Infosys had a choice buy carbon credits from the market, we made a deliberate choice – a choice to get involved in every action that aimed to reduce and/or avoid emissions.

We developed a unique portfolio of carbon offset projects fully funded by Infosys that were anchored on long lasting social and economic impacts for the marginalized communities. Infosys implemented the projects in partnership with NGOs/grass-root entities in the clean cooking and rural electrification space in rural India.

These projects have created long lasting impacts socio-economic impacts, aligned to the UN SDGs as detailed below:

Innovations:

In implementing the carbon neutral strategy, Infosys aimed for excellence and pushing boundaries of innovation. Some examples of the innovations include:

Radiant cooling (Radiflux): Our patented radiant cooling technology is 30% more efficient than conventional cooling, in India (EU patented; patent pending in US & India). Our third-generation radiant

cooling system, called Radiflux, consists of radiant cooling panels that can be installed in place of traditional false ceiling. Our new buildings are built with this technology.

Retroshade: Sun control and shading in building windows helps reduce heat entering the building. We have developed a light-weight device that can be permanently stuck to glass façade to cut off direct sunlight into buildings. This technology, called Retroshade, is pending patent in India.

Terminator: Infosys developed and deployed a tool, Terminator, to alert users to shutdown desktops after working hours and to auto-shut down after a pre-set duration.

SMS alerts for lighting energy: We developed an SMS alert system to notify building managers to take action when lighting load is high when it should not be.

Solar Panels - Hybrid robot solar panel cleaner: Infosys developed a next generation solar panel cleaning robot with advanced features. Our hybrid robot cleaner will provide both wet and dry cleaning-options, offering optimum cleaning options based on the extent of soiling.

IT enabled offset program: Infosys being an IT company, has embraced technology to implement these mammoth projects, each project involving 20,000 to 40,000 rural families. Beginning with the

baseline data collection to recording the beneficiary details, including GPS coordinates, and the details of the distributed units are all done through mobile applications. The same mobile applications will be used to track and monitor these units post distribution.

Biogas-driven buses: We have introduced a pilot program to run employee transport buses on biogas as fuel in our Pune campus in the State of Maharashtra. While this initiative will help us reduce our Scope 3 emissions, this could provide a nationally and even globally scalable transport solution.

ACHIEVEMENT: Carbon Neutrality and Impacts Created:

The carbon neutrality strategy deployed (detailed above), will help Infosys achieve and maintain its carbon neutrality for long-term. In FY2020, Infosys achieved carbon neutrality 30 years ahead of the Paris Agreement. Infosys As of FY2021, we used offsets issued after verification from Gold Standard against 4 clean cooking projects (Gold Standard id: GS1021, GS5417, GS1015, and GS5418).

Our carbon neutrality achievement was third-party assured by KPMG under the PAS2060 standard for carbon neutrality. The carbon neutrality was a voluntary commitment.

Rather, our efforts in the climate change space have created multifold benefits for the organization, communities, our clients, and the world at large, as detailed below:

Awards and Recognition:

- i. Winner of “2019 UN Global Climate Action Awards” by the UN, under the ‘Climate Neutral Now’ category.



- ii. Invited by Ministry of Environment, Forests and Climate Change, India, to present our climate neutral journey at the India Pavilion, UNFCCC COP 25, Madrid, Spain.
- iii. Won the CII – Climate Action Programme award: for 2019-20 with the highest rating of “Resilient”¹.
- iv. Made it to the CDP climate leadership band², fourth time in a row by CDP, the non-profit global environmental disclosure platform.
- v. Ranked #30, on the Wall Street Journal 2021 list of top ‘100 Most Sustainably managed companies in the world’
- vi. Won the CII - National Award for Excellence in Energy Management for Pune – SDB 3 building
- vii. Included in most ratings as a leader. Example: MSCI International ESG leader. Dow Jones Sustainability Index (DJSI), etc.

Way Forward and Sustenance:

Through our sustained efforts in the 3 areas, we have become Carbon Neutral for FY2020 and FY2021.

While our efforts have made us carbon neutral today for the last 2 years, we are not stopping here. In the latest ESG vision published in FY2021, Infosys pledged to remain carbon neutral for each year over the next decade. We also accelerated our efforts to help our clients on their low carbon transition, through our services and solutions.

Most of our investments across these areas, will result in ongoing results over the next five years, at the minimum.

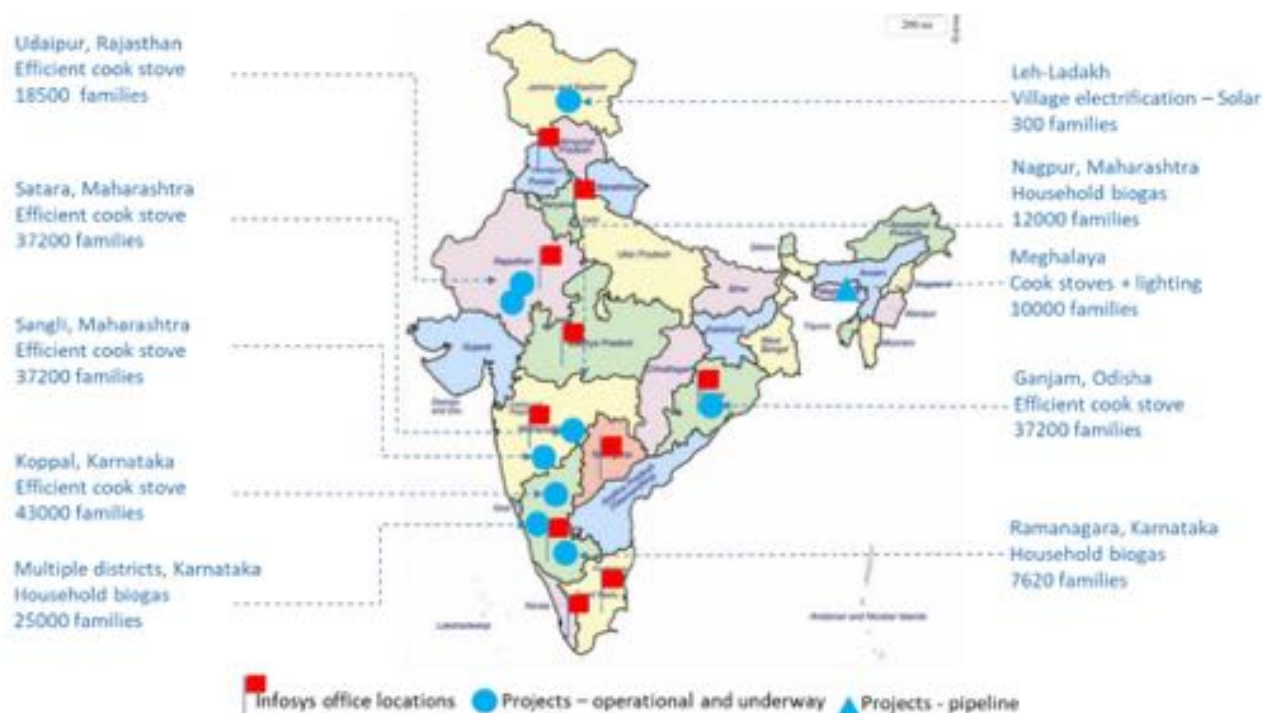
- i. **Energy Efficiency:** The new buildings designs (like orientation, wall to window ratios, etc.) will result in lifelong energy savings, while the retrofit EE projects in minimum 5-15 years of energy savings

- ii. Renewable energy installations (rooftop and on-ground): have a minimum life of 20 years, thereby enabling zero emission energy sources for Infosys for the same period.
- iii. Carbon offset projects are designed long term maintenance support for 5-9 years to ensure that these projects create the intended socio-economic impacts. This also ensures that the impacts are not short lived and can sustain into the next decade as well.

Lessons Learnt and Program Replicability:

Some of the key take-aways based on over a decade long concerted efforts in the climate action space include:

- 1) Net zero is achievable well ahead of 2040 or 2050: When we set the carbon neutral goal in 2011, we were an exception. It was a seemingly unreasonable goal. With right approach and consistent efforts, we were able to achieve it within a decade.
- 2) 2) Need of a flexible program design: The three-pathway strategy that we adopted proved to be very flexible and really helped us optimize the cost of achieving net zero.
- 3) Leadership commitment and oversight is a must: The drive and the buy-in from the management is as important as the ground-up commitment.
- 4) Inhouse expertise: Building some inhouse expertise can go a long way, especially given the constantly changing landscape and project requirements.
- 5) Return on Investment (RoI): Most of the investments in climate action make business sense and have a good ROI and payback period. An avoidance or reduction in energy consumption, have resulted in direct reduction in our operational costs. Most of our climate action EE initiatives is have an estimated payback period of less than 3 years while



those in RE have a payback of about 6-7 years. With the solar plant lifetime of 25 years, the energy from these plants would be practically free for the remaining period.

- 6) Data driven approach: Most of the improvements achieved today by Infosys can be attributed to the data driven approach we used. Not only have they helped us identify the leakages, but also helped us plan and implement the right resource efficiency measures across the organization.
- 7) Making steady, consistent progress over a long period: Continued efforts are needed to achieve and remain carbon neutral.
- 8) Collaboration and Advocacy: Infosys has benefitted from constantly collaborating and sharing our innovations and best practices with multiple stakeholders like researchers, vendors, other corporates and think-tanks. They have allowed us to learn from other leaders in the space, while also sharing our learnings with them. We continue to actively participate and contribute to many national and global business partners and industry

coalitions.

- 9) Community impact: Our carbon neutral program has reaffirmed our belief that the interest of the communities can be taken into account seamlessly, while planning its own climate action.

Replicability:

Our approach to achieving carbon neutrality was built on the principles of reduce, replace, and offset.

Keeping with this principle, we built our program focusing on energy efficiency, renewable energy transition and emissions offset. This makes our approach universal in its construct, and therefore universally replicable.

EE: While most of the measures are replicable across sectors, it is especially replicable to any company owning/managing commercial building space. Some replicable solutions include the command center (detailed in 'Execution Excellence' section above), where we used a data driven approach, as well as the smart building program. In

addition to using the best available technologies, in air conditioning, electric utilities, lighting, insulation, and façade, we target to achieve the best energy performance for our office buildings and data centers. Today over 26million sq.ft. of office space is US LEED platinum or equivalent.

Together, these initiatives have helped reduce our energy consumption drastically. Most EE initiatives have run for almost a decade, which gives us the confidence that they are viable as well as easily replicable.

OFFSETS: Most companies opt to buy offsets/ credits off-the-shelf. Infosys has chosen to select and implement the projects on its own through grass-root level NGOs/entities. This allows us to ensure the focus on the long-term socio-economic benefits in addition to the emission reductions, is core to the project. While this approach requires careful long-term planning, intense due diligence, and strict management control, it is significantly more rewarding in every aspect. Some key differentiators of our offset program:

- Direct involvement in the implementation of the offset projects, ensuring systems and process are in place for effective beneficiary identification, implementation, and monitoring for the project.
- Working with the grass-root NGOs in the region, who understand the needs and sensitivities of the region. Given that most projects involved behavioral changes, the NGOs provided the project the required impetus and acceptance to a technology intervention
- Ensuring use of local employment: In almost all Infosys projects, local youth and women are employed, in addition to joining Self Help Groups (SHGs), thereby taking responsibilities on implementation and ongoing project monitoring for at least 5 years. This is seen to empower youth & women, building confidence to go beyond their comfort zones and take

leadership roles. The field volunteers now understand other requirements of the region and have been suggesting projects like solar lighting, solar cookers, etc.

Through this clear implementation strategy, Infosys showcased to the world that these low-cost projects could ensure effective & valuable interventions for the poor. Infosys while actively engaging & sharing best practices with NGOs, Corporates and Government agencies, has also established for them that these projects could be replicated by any organization at varied scales. This is over and above Infosys' own desire to expand its portfolio of carbon projects, given the past success.

Our implementation and involvement at grass root levels have been widely appreciated and recognized.

Conclusion

A net zero planet is not an option, it is the only way for our survival. While the Paris Agreement sets 2050 for the planet net zero, we proved that it can be done 30 years ahead. When you do it right, it helps not only the planet, but also the communities and the business itself. As a responsible corporate, today Infosys is able to lead by example and able to reap additional benefits in the form of:

- Ability to provide carbon neutral services to our clients
- Opening the doors to business offerings in climate-related services
- Future proofed our company against potential climate regulations (across the world)
- Motivated and inspired work force and other stakeholders
- Established us as true global leader in climate action and
- Proved that with conviction and action, we can save the planet – 2050 carbon neutrality of planet Earth is possible.

ISG

LCY3 LITTLEBROOK, DARTFORD

AIM

Transform the development site from a redundant fossil fuel power station into a logistics building of the future. Situated in Dartford, Kent, the project team have strived to transform the development approach by going beyond minimum requirements, maximising community benefits, early adoption of low carbon approaches and improving the local environment through targeted biodiversity improvements.



The development included demolition and regeneration of industrial land, delivering a new high-tech building that will bring 1300 jobs to the local community.

The development has established high level principles to deliver a leading sustainable project:

- Minimise waste
- Maximise on-site renewable energy opportunities
- Align with Net Zero Carbon approaches
- Improve biodiversity
- Support the local community.

ACHIEVEMENTS

The project has delivered a range of tangible and intangible benefits, where not quantifiable, we have evaluated our performance through stakeholder feedback (see supporting information).

Waste

- Recycling 99.1% of power station demolition waste for use on site

Raising the bar on energy efficiency and Net Zero Carbon

Bericote Properties set out their bold ambitions to create an energy efficient distribution centre with a record-breaking 3.5 megawatt (MW) solar power array, making it the client's largest rooftop PV array in Europe. This will also be their first building to omit natural gas, thanks to its electric model.

Thermal modelling was utilised to optimise in use energy consumption and ensure reduced carbon consumption in operation.

- Utilising local Community Wood Recycling Project, Roots Timber CIC, for timber waste
- Commissioning new outdoor furniture (20 benches), built from waste timber from steel delivery. Energy & Net Zero Carbon
- 3.5MW solar array installed on the building roof forecast at c.20% of total building energy demand
- Omission of natural gas from the building (heating design amended to electric solution)
- Detailed energy modelling study undertaken to inform M&E design. Biodiversity & Landscaping

Biodiversity at the root of the project

The project will include a green roof, new apiary and wildflower habitat to enhance the home for pollinators – including the locally found rare Shrill Carder Bee. Bat and bird boxes, a bee bank and insect hotels will also be present on site, with planting to maximise species diversity and protect rare plants.

Supporting local animal rescue centre, Spirits Rest, the project has undertaken site clearance and scrub removal to prepare for educational activities on site.

Landscaping works will include planting c.150 white elm trees, to help re-establish elm trees in Britain, after significant losses from Dutch Elm Disease.

Partnering with Community Woods Recycling, waste will go to support Roots Timber Reuse, who will also be making benches for the community's 'Pocket Park', utilising timber lengths that delivered structural steel to site.

- Eel habitat improvements in on-site lagoons
- Green roof to office area
- Supporting local wild bee populations, including the rare Shrill Carder bee and Brown Banded Carder bee species present on site
- Creation of an on-site apiary
- Establishment of a colony of disease resistant elm trees Community
- Delivering a programme of engagement events with the Leigh University Technical College and other local schools, Dartford Football Club and the YMCA
- Supporting the establishment of a new animal rescue centre, Spirits Rest
- Volunteering with Roots Timber to support their business with opening a shop.

IN DETAIL

This project has been transformative in the broadest sense, creating significant value for the region by



developing a 97-acre brownfield site, and disused fossil fuel power station, into London's largest logistics park.

Delivering +£13m in social value to the surrounding community, with 2,200+ people working on redevelopment and construction, with Amazon creating 1,300 jobs once the warehouse is fully operational. To enhance biodiversity and wellbeing, we have transformed the landscape by setting aside 30% of the site for permanent open space with extensive cycling facilities/routes, as well as habitat creation for the benefit of wildlife.

Landscaping proposals have maximised areas of species rich grassland, supported protected species, have included the establishment of a population of disease resistant White Elm trees, created community 'pocket park' and a new apiary on site.

Working in partnership with Amazon we are delivering a highly sustainable, 2.3m sq ft logistics building, one of very few four-storey structural mezzanine floored buildings in Europe. Strategically located inside the M25, this is a true Big Box in a last mile location providing direct access to service Europe's biggest city.

We have sought to implement innovative sustainability initiatives that would set a benchmark for the future. During demolition, 99.1% of the

materials from the former power station were reused and recycled, saving the equivalent of over 2m tonnes of CO₂ in vehicle movements and processing of materials.

Targeting EPC rating A and BREEAM Excellent certification this facility will benefit from a 3.5MW solar PV scheme, this will be the largest PV array on a logistics building roof in Europe. The green energy generated will be used in the operation of the facility's automation/lighting/heating.

Given the high energy demand of the building, the solar generation will significantly reduce the energy consumption of the building in use, a detailed energy study has estimated between 25-30% of total demand (regulated and unregulated loads) will be met.

The development's biodiversity plans have been designed to support the local environment and communities' wellbeing, has informed the UK Green Building Council's Nature Based Solutions best practice guidance for the industry.

Self-imposed renewable targets:

- Zero non-renewables used on site
- New flood defence to Thames 2100 standard
- Integrated cycle network scheme
- River frontage improvement works.

Enhance biodiversity deliverables:

- Provide habitat enhancement for:
 - Peregrine Falcon
 - Shril Carder Bee
 - European Eel
 - Water Vole
- Secure the translocation of Lizard Orchids from neighbouring development
- Provide gains for roosting and foraging bats
- Additional nesting opportunities for a wild birds

- Plant disease resistant Elm trees, and thus provide opportunities for White-Letter Hairstreak butterflies
- Deliver a large biodiverse green roof
- Diversify the current habitats and create botanically rich habitat mosaics
- Maintain and improve local green infrastructure
- Create ecology / biodiversity educational resources for local interest groups
- Provide connectivity with existing habitats and existing biodiversity measures on The Bridge business park.

Social Value Local procurement activities, apprentices, employment support and community engagement activities have been tracked with data reported into the Social Value Portal. This is part of an overarching Social Value approach implemented on the project which have strived to leave a positive legacy of the development works on the local community, enhancing the reputation of the project team and construction more widely.

The combined activities for the project have generated over £13m in social value based on the national Themes Outcomes and Measures (TOMs).

Charity/Community engagement:

- We have a dedicated community liaison officer and deliver frequent newsletters and online meetings to update local residents of each new phase of development.
- In partnership with YMCA Thames Gateway we have provided weekly food hampers for Dartford families in need, educational supplies for home-schooling, Christmas Happiness hampers, Christmas presents for local children, hosted online afternoon tea social sessions for elderly residents and much more.
- We began a 5-year partnership with Dartford FC, with the Stadium name becoming

‘Bericote Powerhouse Princes Park’. Part of our funding is dedicated to support and expand on their local community initiatives with young people. This work has been particularly vital during the pandemic.

Supporting local animal sanctuary, Spirits Rest

The project team were keen to support this local charity which was relocated to Dartford from another site in Kent. Working across the project team we were able to undertake works that Spirits Rest had been unable to progress.

We mobilised our landscaping contractor, Wilby Trees, and cleared heavily overgrown areas and opened up an existing yard which had been completely hidden from view.

A bund around the perimeter of the site was also created which will be sown with wildflower seeds, from another donor, providing forage for the new honeybees as well as the local wild bee populations.

Wilby Trees also donated several apple trees which were planted on site as part of these works.

Assisting Spirits Rest during such a challenging time with coronavirus restrictions has been a great opportunity for the project to support the local community.

Roots Timber CIC – working with the local community wood recycling team Reduction of waste was an overarching priority for the project and timber is one of the highest volume waste streams for the construction phase, much of this is packaging materials where pallets are utilised for protection of machinery and robotics used inside the building. Roots Timber were the preferred timber waste contractor, providing us with a cost-effective waste service which also met with waste reduction objectives.

Roots Timber were commissioned to make outdoor furniture for the pocket park, the furniture was made from timber our structural steel was delivered on.

All of the new outdoor furniture is going to be made from diverted timber waste and since placing orders there have been several more requests for the adjacent construction sites.

We have also donated one to a local animal rescue centre, Spirits Rest, that the project has supported. The project team also undertook 60hrs of volunteering with Roots to build and load timber racking on their site to support them with opening to the public to sell reclaimed timber.

J TOMLINSON

LCY3 LITTLEBROOK, DARTFORD SOLIHULL ENERGY CENTRE – GROUND SOURCE HEAT PUMP INSTALLATION

AIM

Midlands-based housing group, Bromford, provides customers with new and affordable homes, as well as a range of services aimed at reducing welfare-dependency and generating social value in employment, education, health and community safety.

Bromford was looking to procure and implement a sustainable and effective heating solution for an over 55s sheltered scheme located in Solihull. The scheme comprises 37 'hard-to-treat' Edwardian flats and cottages – all of which were originally heated by expensive-to-run storage heaters, and difficult to maintain a suitable temperature due to a lack of space and the tall ceilings in many of the properties.

Despite a gas supply being available nearby, the scheme is situated in a conservation area where heating options are limited due to external property modification restrictions. Following close collaboration between J Tomlinson, Bromford and Vaillant, the Vaillant 3 x 38Kw flexotherm ground source heat pump system was selected as the most suitable, unobtrusive and affordable solution for Bromford and its residents.

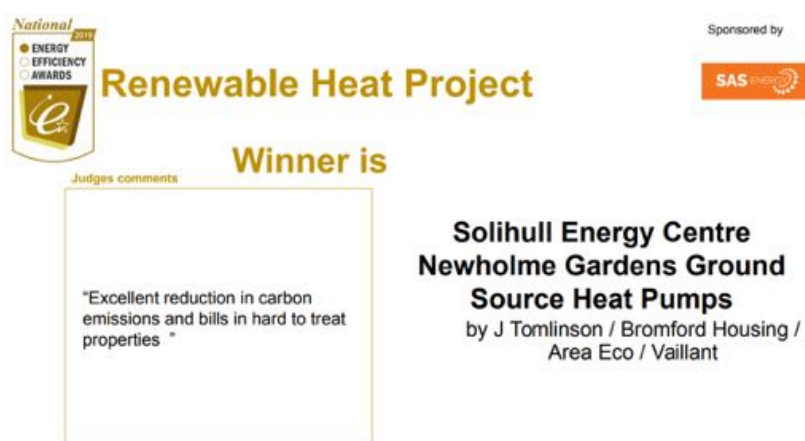
Close collaboration between J Tomlinson, Vaillant and Bromford was critical to success of the project, which required the creation of twenty-five 120m deep boreholes into the earth to support the ground source heat pump system.

Energy centre works

This system allowed for off-site installation, helping to reduce engineers' time on site and speed up the process. Furthermore, offsite fabrication of the Energy Centre helped to reduce costs and expedite the programme by an extra six weeks whilst minimising disruption to residents.

Remote connectivity to the Energy Centre allows J Tomlinson and Bromford full visibility of any potential faults, which can be accurately diagnosed prior to an engineer visiting site.

For billing purposes, heat meters were also integrated within the controls to measure energy consumption and provide accurate data for tenant billing.



ACHIEVEMENTS

Bromford Housing have set a target to bring all Rental or Let Properties to a minimum EPC Rating of C. This system has future-proofed this and is also tackling fuel poverty by reducing tenants' bills by 40%. Residents have historically been paying approximately £570 per year for heating, which is

expected to be decreased by an average of £228 per year.

The pioneering nature of the project with its robust design has given the client confidence in reconciling further projects, which we are currently in the process of collaborating further. Due to the vast energy efficiency benefits of this project, it was awarded Renewable Heat Project of the Year at the National Energy Efficiency Awards 2019.

As J Tomlinson is an MCS-accredited installer, Bromford will be able to generate additional revenue via RHI and ECO funding, equating to over £570K spread across 20 years.

Furthermore, J Tomlinson was able to insulate and screen the energy centre with a view to preventing any noise or visual pollution within the conservation area. We also fully regenerated any disturbed areas by planting shrubs.

Customer Endorsement/Testimonial

"I have been a resident at the above scheme for the past 11 years, and have always dreaded the cold winters. I found that the night storage heating system installed was not to my liking as it caused me to suffer cold-like symptoms and congestion. Consequently I only used the heaters when it was really necessary and relied on alternative heating methods at other times.

I would like to say I am so happy and pleased with the new heating system which has recently been installed, I find it easy to use and it keeps the flat lovely and warm at all times, it is a pleasure to walk back into after a spell out in the cold. The heater in the lounge does make some noise but I don't find it intrusive at all.

It is a treat to have a lovely warm home at last, and I would like to express my thanks to Bromford and J Tomlinson for doing an excellent job."

- Hazel D.



IN DETAIL

Background

Midlands-based housing group, Bromford, provides customers with new and affordable homes, as well as a range of services aimed at reducing welfare-dependency and generating social value in employment, education, health and community safety.

Bromford was looking to procure and implement a sustainable and effective heating solution for an over 55s sheltered scheme located in Solihull. The scheme comprises 37 'hard-to-treat' Edwardian flats and cottages – all of which were originally heated by expensive-to-run storage heaters, and difficult to maintain a suitable temperature due to a lack of space and the tall ceilings in many of the properties.

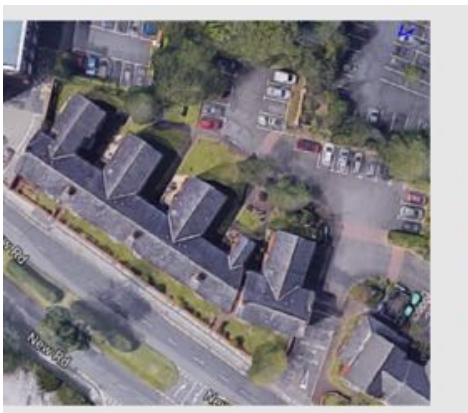
Despite a gas supply being available nearby, the scheme is situated on a conservation area where heating options are limited due to external property modification restrictions. Following close collaboration between J Tomlinson, Bromford and

Vaillant, the Vaillant 3 x 38Kw flexotherm ground source heat pump system was selected as the most suitable, unobtrusive and affordable solution for Bromford and its residents.

Solution

Resident engagement

Prior to project commencement, J Tomlinson and Vaillant held a joint open day on site at the scheme, giving residents the opportunity to see what their new heating system would look like and ask any questions about the upcoming works. The open day was very well attended by residents, whom quickly became engaged with the project and its many benefits.



Regular engagement with residents ensured that the use of drilling rigs on site (and consequent phased closure of the car park area) did not create any issues. This also enabled trenching and header works to be carried out smoothly and to plan.

Close collaboration between J Tomlinson, Vaillant and Bromford was critical to success of the project, which required the creation of twenty-five 120m deep boreholes into the earth to support the ground source heat pump system.

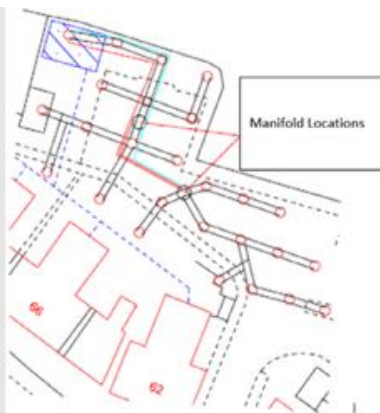
Energy centre works

This system allowed for off-site installation, helping to reduce engineers' time on site and speed up the process. Furthermore, offsite fabrication of the Energy Centre helped to reduce costs and expedite the programme by an extra six weeks whilst minimising disruption to residents.

Remote connectivity to the Energy Centre allows J Tomlinson and Bromford full visibility of any potential faults, which can be accurately diagnosed prior to an engineer visiting site.

Project results

For billing purposes, heat meters were also integrated within the controls to measure energy consumption and provide accurate data for tenant billing.



Bromford Housing have set a target to bring all Rental or Let Properties to a minimum EPC Rating of C. This system has future-proofed this and is also tackling fuel poverty by reducing tenants' bills by 40%. Residents have historically been paying approximately £570 per year for heating, which is expected to be

decreased by an average of £228 per year.

The pioneering nature of the project with its robust design has given the client confidence in reconciling further projects, which we are currently in the process of collaborating further.

As J Tomlinson is an MCS-accredited installer, Bromford will be able to generate additional revenue via RHI and ECO funding, equating to over £570K spread across 20 years.

ACHIEVEMENTS

Highly commended project – The project has been shortlisted for the Heating & Ventilation News District Project of the Year Award.

Reducing fuel poverty – the system is helping to tackle fuel poverty by reducing residents' energy bills whilst providing an effective and sustainable heating solution.

Funding – the project qualified for RHI and ECO funding due to its energy-efficiency benefits. Furthermore, as J Tomlinson is an MCS-accredited installer, Bromford will be able to generate additional revenue via RHI and ECO funding, equating to over £570K spread across 20 years.

Tenant engagement – J Tomlinson, Vaillant and Bromford ensured the full engagement of all residents throughout the project through open days, regular project updates, and high-quality and reliable workmanship.

Other tenant-focused events led by J Tomlinson and Bromford include:

- Gifting all New Road scheme tenants with a chocolate selection bags at Christmastime
- Donating outdoor seating and tables to be used in the scheme's outdoor communal area
- Educational open day held on site at the beginning of the event allowing tenants to see first-hand what their new system would look like, as well as its many environmental and cost benefits
- Conservation - We were also able to insulate and screen the energy centre with a view to preventing any noise or visual pollution within the conservation area. We also fully regenerated any disturbed areas by planting shrubs.
- Collaborative working – open and collaborative working relationships between J Tomlinson,

Bromford and Vaillant were instrumental in ensuring the successful delivery of this complex project.

Social Involvement Statement

Resident open day

Prior to project commencement, J Tomlinson and Vaillant held a joint open day on site at the scheme, giving residents the opportunity to see what their new heating system would look like and ask any questions about the upcoming works. This educational open day was very well attended by residents, whom quickly became engaged with the project and its many benefits.

Refreshments and seating was provided to residents on the day, which encouraged residents to stay and interact with the team and one another, helping to promote socialisation - particularly amongst lonely individuals.

Reducing fuel poverty

All residents were provided with one-on-one training on how to use - and get the most out of - their new heating system, helping to reduce fuel poverty and promote greater independence.

Improving the environment

The ground source heat pumps replace expensive-to-run electric heaters, helping to improve energy efficiency and reduce carbon emissions via the use of renewable energy.

Spreading Christmas cheer

J Tomlinson worked closely with Bromford to get to know each resident on an individual basis. At Christmastime, as a thank you to residents for their patience, J Tomlinson gifted all residents with chocolate selection bags during their annual Christmas buffet.

Environmental conservation

The scheme is located on a conservation area, meaning properties were 'hard-to-treat' in that heating options are limited due to external property modification restrictions.

J Tomlinson was able to insulate and screen the energy centre with a view to preventing any noise or visual pollution within the conservation area. We also fully regenerated any disturbed areas by planting shrubs.

Donation of outdoor furniture

To promote more interaction between residents, J Tomlinson has donated new garden furniture to New Road tenants. The donated tables and benches will be utilised in the outdoor communal areas of the scheme, helping to promote interaction and community pride among residents.

Testimonial - client:

"This was an ideal system for this scheme - the original Edwardian buildings that were converted into flats had some rooms that were large, oddly shaped, and with high ceilings - making it difficult to maintain a suitable temperature at an economic cost for the elderly residents. There was little space for conventional heating systems so the commercial ground source heat pump system meets the criteria well.

Working with J Tomlinson, we were able to devise a scheme, utilising the car park and landscaped areas to install the boreholes and heating hub to obtain maximum efficiency from the ground array and heat pumps.

The level of warmth in residents' homes is far superior to that previously provided by the electric storage heaters. We are very pleased with the way the system is running and delivering heat to customers' homes at a very low running cost. Even during the height of winter, only one or two heat

pumps were required to provide the heat required by the 26 properties."

- Nigel Gosling, Senior Contracts Manager,
Bromford

Testimonial - resident:

"I have been a resident at the above scheme for the past 11 years, and have always dreaded the cold winters. I found that the night storage heating system installed was not to my liking as it caused me to suffer cold-like symptoms and congestion. Consequently I only used the heaters when it was really necessary and relied on alternative heating methods at other times.

I would like to say I am so happy and pleased with the new heating system which has recently been installed, I find it easy to use and it keeps the flat lovely and warm at all times, it is a pleasure to walk back into after a spell out in the cold. The heater in the lounge does make some noise but I don't find it intrusive at all.

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- Hazel D

JLL-CHURCHILL SQUARE GREEN TRAVEL MEMBERSHIP

AIM

Churchill Square Shopping Centre wanted to support and encourage sustainable transportation for all people working on site. With this goal in mind, we became aware of the green travel network, Easit, which promotes themselves as providing an easier, healthier, greener way to get people to work by providing great incentives and discounts.

there was an extensive public transportation network around and coming into Brighton, this should be the first choice for staff working within the shopping centre and the usage of this transportation network needed to be encouraged.

In June 2018, Churchill Square became a member of Easit. We joined the organisation to reward staff working onsite who were already choosing

sustainable travel as well as encourage other employees to make the same choice by reducing the individual's costs. Additionally, by staff choosing not to drive in site this would help reduce our environmental impact. Churchill Square currently is the only shopping centre that has signed up to this scheme.

Through the membership, all staff working onsite (this includes shopping centre and retail staff) are able get the following discounts on purchases of travel and travel related products:

ACHIEVEMENTS

Churchill Square Shopping Centre is currently the only shopping centre to sign up to Easit. We have been able to get 26 separate onsite companies and 102 individuals within those companies to register for membership which the majority of registrants use for discounted bus and rail travel.

- rail and bus tickets
- bicycle purchase and bicycle loan
- bicycle safety equipment
- electric bike and electric moped
- home charging units
- car club membership

IN DETAIL

At Churchill Square Shopping Centre, we were regularly receiving requests from retailers and staff members about providing discounted parking to those that wanted to drive into work. We felt that as



The cost is an annual membership to Easit is £5,000 per year which is paid for by revenue generated from Churchill Square Car Parks. To take advantage of some discounts such as rail, the individual needs to purchase an annual membership card for £5.05.

To provide the discounts for all staff members, each individual retailer signs up with Easit via Churchill Square Management and then the retailer provides their specific login information to their staff. The store manager is usually the main contact that manages this relationship.

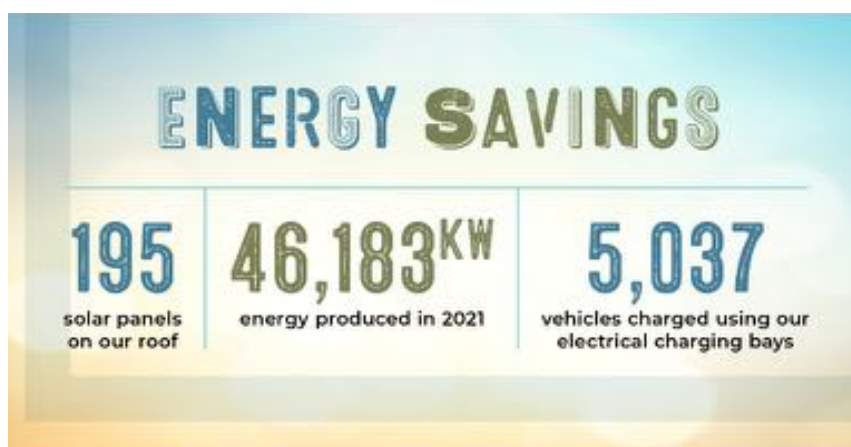
Since Churchill Square joined Easit in June 2018 we have been able to get 26 separate companies/retailers working onsite to sign up to the program resulting in 102 registered users. From the enquiries about membership and from feedback Churchill Square staff, the majority of individuals have used the membership to purchase discounted bus and train season tickets.

We found it difficult to get some stores to sign up to the program or to promote it. The main barriers are the time constraints of the managers and lack of interest as they do not see a need by their staff members. However, there are always new members of staff joining retail teams as staff turnover is high. These new members see our back of house signs as well as the promotion on the work discounts section of our Churchill Square app.

These staff then contact the Centre Management for more information. From this contact, we are able to get the retailer to sign up and find an appropriate person to manage the relationship between Easit, the retailer, and other staff members of that unit. We are currently reviewing how to reach more staff members as they seem to be the drive for joining the program. We are looking for more locations back of house to display notices and are currently working

on a tenant portal which (when finished) will include information about Easit.

Even though some of the managers do not seem to be interested initially we are regularly reminding them about the program in our in-person meetings and newsletters and encouraging them to promote to their staff. As store managers change, this is used as an opportunity to promote the membership in the induction information.



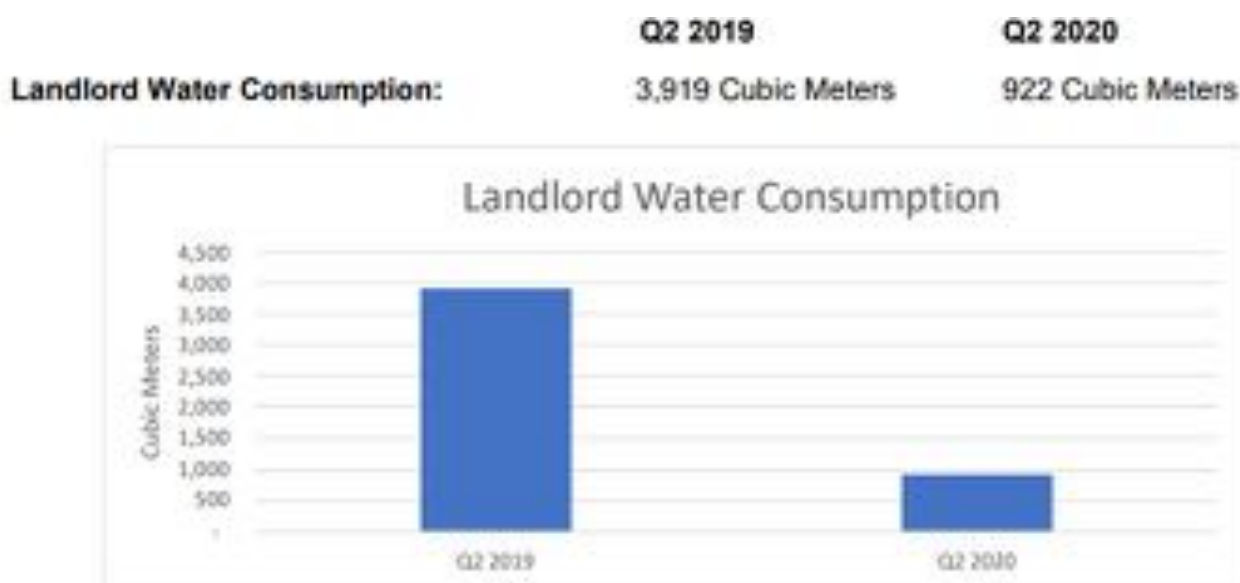
JLL-FORTUNE POINT HOLDINGS

REDUCTION IN WATER CONSUMPTION FOR 1 KINGDOM STREET BUILDING

AIM

The aim of the project was to make a significant reduction of water consumption without affecting the service we provide to our tenant.

of water saved in just 3 months. This reduction in consumption was achieved with a fully occupied building, before the start of the pandemic lockdown. Since the lockdown occupancy has been very low and a further 2,997 cubic meters of water or



To do this we engaged with a company called WhiffAway, who retrofitted all urinals in the building (45 in total) to operate safely and effectively without the need of regular flushing. In other words the urinals now operate without any water at all, by virtue of a chemical free enzyme that has no adverse impact on the environment. The cleaning products provided by WhiffAway to clean the urinals are also enzyme based and free of chemicals.


2.9 million litres were saved April - June, when compared to the same quarter the previous year. As evidence we have uploaded the environmental reports for Q1 and Q2, showing the significant reduction in consumption year on year and the original feasibility study/projection made by WhiffAway to show potential reduction in water usage.

ACHIEVEMENTS

In just 1 quarter, January to March 2020, since installation (December 2019) we saved 1057 cubic meters of water, when compared with the same quarter in 2019, which translates in 1 million litres

IN DETAIL

We engaged with a company called WhiffAway, to retrofit all urinals in the building (45 in total) to operate safely and effectively without the need of regular flushing. We then spoke with the owners of the building, Surveyor/Director and all

|  | | ONLY ENTER DATA HERE:---- | | | |
|--|------------------|--|---------------------------------|-------------------------|--------------------|
| Location: Ground Floor. | | COMPANY: One Kingdom Street | | Flashes per hour | Cost per m3 |
| Cost Per m3 | £2.03 | No Urinals | Cistern's total capacity | 3 | £2.03 |
| No. flushes per hour | 3 | 4 | 18 | | |
| cistern(s) capacity in litres | 18 | | | | |
| No of Urinal | 4 | Miscellaneous annual costs:----- £0 | | | |
| cost per urinal per hour | £0.03 | (urinal blocks/cleaner/freshener contracts/flow controls etc.,) | | | |
| Cost per urinal per annum | £240.07 | Installation cost per urinal @ £180.00 each | | | |
| Annual water costs | £960.27 | PPM Service Charge@ £1.92 per week = Annual Service charge | | | |
| Miscellaneous annual costs | £0.00 | £129.20 per urinal | | | |
| Total annual costs | £960.27 | Carbon Saving per annum in kg | | | |
| Recommended water flushing | 0 | 92.2428 | | | |
| Service charge includes 4 PPM Service Visits, changing the cartridge, 1 bottle of Concentrated Cleaner per urinal per annum and an annual replacement valve. | | Payback Period in Years | | | |
| | | 1.29 | | | |
| First Year Cost per urinals X | | First Year Savings per urinals X | | | |
| Installation | £720.00 | 4 | | | |
| Service | £516.80 | Water savings in cubic Metres | | 473.04 | |
| water | £0.00 | Total | | -£276.53 | |
| Total | £1,236.80 | | | | |
| Second Year Cost onwards | | Second Year Savings onwards | | | |
| Service | £516.80 | | | | |
| water | £0.00 | Total | | £443.47 | |
| Total | £516.80 | | | | |

Occupiers to gain their agreement to put the cost involved in introducing the waterless technology through the service charge, explaining the savings, (environmental and financial) that this initiative would bring to Occupiers.

All parties agreed to incur the cost, a total of 7.2k , which included a year supply of cleaning product. The cost is forecast to be offset by savings in utility expenditure over a 12 month period. The maintenance costs of 5.1k per annum are offset by the savings made in rodding/pipework maintenance, as the new technology prevents blockages, using a cartridge that does not allow solids to enter the pipework or limescale build up.

There have been no blockages and no rodding costs incurred since the technology was installed (December 2019). The urinals now operate without any water at all, by virtue of a chemical free enzyme that has no adverse impact on the environment. The cleaning products provided by WhiffAway to

clean the urinals are also enzyme based and free of chemicals.

The bottles are also refilled and reused. Details of the savings made to date were shared with the Occupiers, wider JLL building team and JLL's sustainability team, as a best practise initiative that could be carried out in any building. As future development, we now want to continue achieving reduction in consumption for all utilities and we are starting to work on a number of initiatives that will show continuous improvement (electricity consumption in particular).

JOSEPH GALLAGHER GROUP REVIEW & CHANGE

AIM

Through the years of operation, The Joseph Gallagher Group has continually recognised that areas of our work have had an impact on the environment and the world. As an organisation in order to ensure continued improvements in sustainable practices we have committed to embedding the fundamentals of environmental and sustainability drivers into our modus operandi as a business.

ACHIEVEMENTS

This process of review and change started with the appointment of Ian Ford as the Group Environmental and Sustainability Manager, where a new role within the organisation was created. Ian took apart the outdated systems and draft strategies to build a functioning and working Environmental Management system for the organisation from the ground up. He took time, analysed current projects, spoke with staff onsite and in the offices to understand what was



The Group's response to addressing climate change has led to the prioritisation of implementing the environmental strategy and sustainability practices. Targets have been laid out, based on seven key internal areas identified to ensure continued growth and help towards becoming Net Zero by 2030 whilst leaving a positive legacy in the communities where we work.

During the turbulent and trying times of both 2020 and 2021, the Joseph Gallagher Group reflected upon its focus on sustainability practices and environmental strategy. As a collective group it was decided that it was in need of revitalising due to the issue of climate change becoming increasingly apparent - from wildfires in Australia, America and Greece, to heatwaves in America, UK and Japan to the flooding in Germany, India and China to name but a few. The need for action and commitment to achieve real, tangible results toward the fight against climate change has never been more prevalent than now.

needed. He reassessed its procedures to ensure the Group were doing all that could be done to lead the way to building a better and more sustainable future.

He set out and established the organization's strategic sustainability targets and objectives, developed procedures, systems and policies in line with our revitalised core beliefs and usher the company into its new era of sustainable operations.

IN DETAIL

The first task undertaken by Ian was to formalise the commitments of the company by updating and establishing more rigorous and challenging environmental and sustainability policies. Once these were created it enabled the Joseph Gallagher Group to visualise and begin to work toward real lasting embedded changes.

The following policies were updated, improved and implemented in the organisation:

- Environmental
- Energy
- Green procurement
- Green transport

There were 7 key areas identified for environmental and sustainability improvement these were:

- Energy
- Carbon
- Waste
- Training
- Materials
- Climate change
- Corporate responsibility

Following this, rigorous and challenging strategic environmental and suitability goals and targets

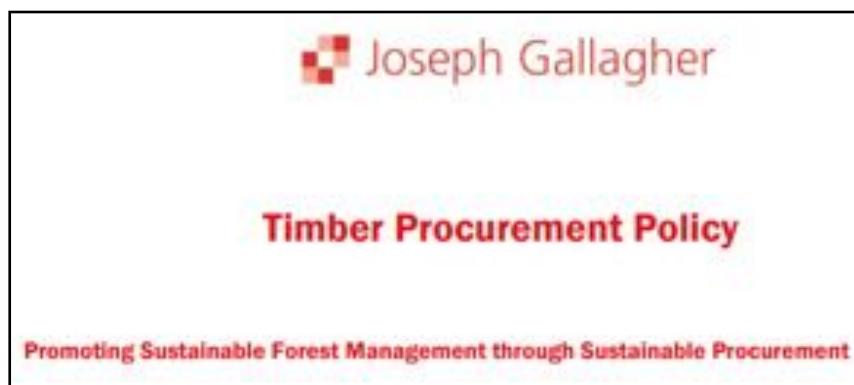
were laid out, based on the 7 key areas identified. Next Ian led the research, presentation and agreed buy-in from the Group's management team of a SMARTwaste system. Upon this agreement, the implementation of such a SMARTwaste solution is currently being implemented. The system's responsible for tracking, monitoring and reporting. It was paramount to ensure continued growth toward the company's goals. The company settled on implementing SMARTwaste as it was able to collect and correlate data across the organisation in 6 of the key areas. The system is still being rolled out across the organisation but is already showing promising figures and reports.

Ian then tackled and worked to establish a comprehensive auditing and a schedule of continual improvement across the organisation's operating systems and procedures. Ian created and set up an Energy Management system from scratch in line with ISO 50001. He then led the group's directive in getting the Energy management system rolled out and accredited. At this stage, the Energy management system is being built and deployed strategically across the organisation with a target date of first quarter of 2022 to be fully operational and accredited. This system alongside SMARTwaste, as part of the updated and ISO 140001 accredited Environmental management system, will together feed into the organisations Streamlined Energy and Carbon Reporting and The Energy Savings Opportunity Scheme reports.

Joseph Gallagher Group have committed to investing in and addressing the following areas that matters to us and our industry;

1. ENERGY & CARBON

The construction industry in the UK consumes about 4.5% of the national energy total and generates over 40 million tonnes of carbon dioxide, Joseph Gallagher Group have employed SMARTwaste a new system to allow us to track and monitor our



energy uses and carbon emission both emitted and embodied, this system will be used to develop our goals and reduction targets in line with science-based target.

2. WASTE

400 million tonnes of materials are used in the construction industry each year in the UK and 100 million tonnes of this becomes waste. Joseph Gallagher Group has employed SMARTwaste, a new system to allow us to track and monitor our material use and waste production, this system will be used to develop our goals and reduction targets in line with science-based targets.

3. SUSTAINABLE PROCUREMENT

We need to source and use materials responsibly. Reducing costs and waste disposal, we are prioritising suppliers that can meet recognised independent sustainable certifications such as FCS, PFCE, Cares and BES6001 and are using SMARTwaste to track logistic movements and the embodied carbon from the procurement process.

4. SKILLS & EMPLOYMENT

All project managers, site managers and key personnel with responsibility for the environmental and sustainability of projects will participate in the Site Environmental Awareness Training Scheme (SEATS), with a focus of keeping at least 10% of our workforce trained in an environmental aspect.

5. CLIMATE CHANGE

The Joseph Gallagher Group and the world are facing a global crisis and we know we must address the carbon produced through our activities, energy consumption, waste procedures and supply chain in order to make sure that our projects are at the front, leading the way, in ensuring we are as sustainable as possible.

The Joseph Gallagher Group are on a new journey of the reinitialized tenet of building a greener future. Ian is spearheading this process, with enthusiasm and the company behind him, he is in the process of pledging the organisation to join The Science-based target organisation and to join the climate pledge.



KOREA ENVIRONMENTAL INDUSTRY & TECHNOLOGY INSTITUTE

CONSUMER INFORMATION PROGRAM FOR SUSTAINABLE CONSUMPTION AND PRODUCTION

AIM

In order to provide consumers with information on eco-friendly products, we give Korea Eco-Label certification to eco-friendly products that prevent waste of resources and environmental pollution compared to other products for the same usage.

While operating various support programs to promote the consumption of eco-friendly products, we encourage consumers to participate in environmental preservation activities through the use of eco-friendly products, and encourage companies to develop eco-friendly products.

ACHIEVEMENTS

As of June 2020, we have assigned Korea Eco-Label certification to 4,403 companies and 17,370 eco-friendly products. In addition, we have achieved purchase performance of eco-friendly product worth about 4.8 billion dollars(5.84 trillion won) in 2019 by operating the program to promote consumption of eco-friendly products.

Based on the purchase performance of eco-friendly products, we also achieved an average annual reduction of 12,504,082 tons of CO2 emissions

and 6,983,641 tons of recycling resources(waste wood, waste paper, waste aggregate, etc.) for 5 years from 2013 to 2018.

IN DETAIL

Eco-Label is operated not only in Korea but also in various countries including the European Union, the United States, China, and Japan. However, what

| KOREA ECO-LABEL | |
|---|---|
| Ecolabel Certification | |
| Department in charge ▶ Eco-Certification Office | |
| Step | Note |
| ① Submission of application form for Eco-Labeling | • Apply in the online application system(http://elms.letil.or.kr). |
| ② Payment of application fee | • Make online payment in the online application system (http://elms.letil.or.kr). |
| ③ Document review in advance | <ul style="list-style-type: none"> • Whether conformity to environment-related laws • Review an application scope of certification criteria and raw material uses in detail • Review the application of certification criteria similar to quality standard. |
| ④ Field inquiry audit | <ul style="list-style-type: none"> • Whether a production and an environmental protection facility is installed and operated properly. • Whether the real production process equals to the previously submitted materials including raw material uses. • Collect and seal samples, request for test and analysis, etc. |
| ⑤ Testing and Analysis | • Conduct in a certified test (inspection agency). |
| ⑥ Creation of the result report | <ul style="list-style-type: none"> • Suggest a review opinion on the document (on-site verification results including hazardous material use and others). • Check the conformity of a certification criteria to the test analysis results of a certified test - inspection agency • Suggest a review opinion on the appropriateness of Eco-friendliness-related mark - advertisement on product. |
| ⑦ Holding of Deliberation Committee | • Hold the Committee at KETIL. |
| ⑧ Notification of the result | • Notify the Deliberation committee results and use fee calculation. |
| ⑨ Payment of use fee | • Make online payment in the online application system (http://elms.letil.or.kr). |
| ⑩ Issue of certificate | • Certificate is issued after the use fee is paid. |
| ⑪ Use of Eco-Label | • Valid period of certification : 2 years. |

sets Korea Eco-Label apart from other countries is that it not only certifies Eco-Label for eco-friendly products but also operates various support projects to promote the consumption of eco-friendly products.

Green public procurement, Green Stores selling eco-friendly products, and Green Consumption Collaborating Center providing consumer education and promotion of eco-friendly products are representative eco-friendly product support projects. First of all, public institutions are obligated to purchase eco-friendly products in the purchase of office supplies, office furniture, etc., and manage the mandatory purchase plans and performance of eco-friendly products of public institutions every year.

As a result, in 2019, we have achieved about 3.2 billion dollars (3.8811 trillion won) in the purchase of eco-friendly products by public institutions. Moreover, we have designated retailers such as marts, department stores, and convenience stores for Green Stores selling eco-friendly products, and it has expanded to 600 stores in 2020 since 40 stores were designated in 2011.



KOREA ECO-LABEL

Support for International Certification

KEITI currently signed the Mutual Recognition Agreement (MRA) with 11 international Eco-Label operating agencies and handled Eco-Label certification business for certifiable products.

Available countries

| | | | | | | |
|------------------------------|---------|--------|-----------|-------|-------------|-----------------|
| Thailand | Taiwan | Japan | Australia | China | New Zealand | Northern Europe |
| North America (USA / Canada) | Germany | Taiwan | | | | |

Contact : Eco-Certification Office of KEITI
 ※ For further information, refer to the website (<http://el.keiti.re.kr/en/service/enindex.do>).

Lastly, we have established and have been operating Green Life Support Centers (8 as of June 2020) to educate and promote eco-friendly products based on the region, and provide consumers with information on eco-friendly products. In the future, we plan to continue expanding Green Stores and Green Consumption Collaborating Center to expand distribution networks to promote the consumption of eco-friendly products.



Korea Eco-Label

Eco-Label certifies products that have reduced environmental impacts. This encourages consumers to purchase environmentally friendly products while inducing companies' voluntary action for environmental improvements in their products.



Environmentally friendly detergents (Company D)

• Sales increased by 1,233% after being certified.

Remanufactured toner cartridge (Company S)

• Sales increased by 360% after being certified.

LARSEN & TOUBRO

L&T HCI IC WDFC CTP 14

AIM

Western Dedicated Freight Corridor, Civil Track Package- 14 (WDFC CTP-14) is Indian's first Integrated project, which includes design and construction of civil, building and track works for double line railway involving formation in embankments/cuttings, bridges, structures, buildings, ballast on formation and track works, design, supply and installation of 2X25 KV traction power supply system, including testing and commissioning.

On completion and commissioning of this project, it will enable speedy mobilization of goods across major cities through electric driven engines which replace around 4 lac trucks from Indian roads, and this contributing towards reducing traffic congestion, road accidents and emission of greenhouse gases and simultaneously increase goods transporting speed.

L&T Construction Consortium has been appointed by the proponent, Dedicated Freight Corridor



Corporation of India Limited (DFCCIL) as the prime contractor for the execution of this project and construction work commenced on 1st Feb 2017. So far 75 % of the construction work has been completed and completion is due on Dec 2022. Due to Covid-19 Pandemic, there is a delay in construction schedule.



Safety Barriers from waste concrete

ACHIEVEMENTS

The comprehensive waste management program with a net zero waste mission has many environmental benefits with respect to material circularity, carbon reduction through reduced disposal requirement and enhanced life cycle of material, local habitat conservation through rehabilitation of topsoil and prevention of degradation of land habitat through decrease land area requirement for disposal.

Also, food waste is being disposed through Pig Farm as feed material and greatly ensuring the food chain balance. Comprehensive reuse of excavated soil, crushed waste concrete and other aggregates greatly support material linearity, reduced pressure on local virgin material demand and their avoiding their extraction. All of these activities have myriad positive impact in controlling pollution, habitat conservation, resource conservation & circularity of materials, and creating a balance in between developmental infrastructure work and environmental safeguard.

IN DETAIL

1 About the Project

Western Dedicated Freight Corridor, Civil Track Package- 14 (WDFC CTP-14) is Indian's first Integrated project, which includes design and construction of civil, building and track works for double line railway involving formation in embankments/cuttings, bridges, structures, buildings, ballast on formation and track works, design, supply and installation of 2X25 KV traction power supply system, including testing and commissioning.

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2 Comprehensive Waste Management Program (Net Zero Waste Mission)

This is being a massive civil infrastructure project, environmental impact during construction phase was identified during EIA study with respect to various environmental attributes and significantly on C&D waste. Another aspect of this project was the massive earth work that involved removal of topsoil to get the final grade of soil to be used for construction work. Other construction waste materials i.e., waste concrete and other demolition waste, plastics, wood, packaging materials, food waste from worker colonies etc pose a detrimental environmental consequence owing to the enormity of the project (500 M USD).

Anticipating this, we developed a comprehensive waste management program with net zero waste mission and implemented on the project during construction work. We clearly defined our waste streams with precise guideline to collect, record, dispose and recycle/reuse the waste in compliance with regulatory requirements and company resource conservation approach through R-R-R principle.

This waste stream includes but not limited to removed topsoil, C&D waste, food waste, general waste, hazardous waste, E-waste, biomedical waste, plastics, paper etc. We provide special emphasis on Reduce-Reuse-Recycle(RRR) approach and there is a continual effort to reduce the waste quantity in first place and to recycle/reuse the entire waste cycle as far as possible. So far, this integrated approach in waste management has greatly reduced our environmental footprint along with the material and disposal cost.

3 Waste Management Details

3.1.1 Removed Topsoil Management

All the topsoil which has been removed during the land clearing process has been collected and stored. Once the construction work completes, we are rehabilitating the land surface with the collected

topsoil. So far 3932304.6 cubic meter of topsoil has been rehabilitated and 615679 cubic meters has been stored for further utilisation at later part of construction work.

3.1.2 Food Waste Management

At construction peak, around 3000 workers have been dinning in our camp facility and everyday huge amount of food processing waste and food waste is being generated. Being this a remote project away from the reach of food waste service provider, we decided to go our own way of eco-friendly solution. We addressed the cultural aspects of our workers not to waste food through awareness sessions and greatly reduced food waste quantity. Also, we visited nearby pig/cattle farms and offered them food processing waste and food waste to use as a feed. They were happy to accept this as it was a huge cost saving for them on fodder. This is a win-win situation for both of us and with this approach we have managed to dispose 137 cubic meter of food waste in the last 2 financial year. The local farmer community is being greatly benefitted by this effort.

3.1.3 C&D Waste Management

We adopted a zero concrete waste (C&D) policy for this projected and planned meticulously to reduce concrete waste generation in first approach and to reuse all the generated waste concrete with no disposal at landfill. The waste concrete waste is collected, crushed, and utilised as road subbase, ramp construction, grading and fill material in road construction, in casting safety road barriers, concrete blocks etc. Since the inception of the project, we have been successful in recycling waste concrete by 100 % and the quantity for 2019-20-21 period is 2581 cubic meter.

3.1.4 Other Waste Type

Other than the above bulk waste material, we have been collecting and recycling used lubricants, paper and cardboards, scrap metal, E-Waste, plastics etc and we are successful in recycling all these materials almost by 100 % percent except hazardous waste. Hazardous waste is being disposed through approved hazardous waste vendor. We have recycled 201.4 MT of steel scrap, 115 MT of plastics waste, 1524 liters of

| Waste Recycled/Reused | | | | |
|-----------------------|---------|------------|-------------|---------|
| Waste Type | Units | FY:2019-20 | FY: 2020-21 | Total |
| Excavated Topsoil | m3 | - | - | 3932305 |
| C&D Waste | m3 | 543 | 720 | 1263 |
| Food Waste | m3 | 81 | 56 | 137 |
| Paper Waste | kg | 117 | 110 | 227 |
| Plastic Waste | kg | 114330 | 690 | 115020 |
| Steel Scraps | MT | 51.4 | 150 | 201.4 |
| Used Oil (Lubricant) | litters | 1524 | 0 | 1524 |

lubricant and 277 kg of plastics have been recycled through approved recycler.

4 Training and Awareness

To make this comprehensive construction waste management program successful, we have been regularly providing environmental management training to all our workforce, staff, subcontractors, and other stakeholders. This training program includes but not limited to waste management, biodiversity conservation, resource and energy conservation, hazardous waste management, pollution control and prevention. The total training hours conducted so far from the inception of the project is 5952 Manhours.

5 Fines and Penalty

L&T has been executing this project for the last 4 years and time to time, external audits are being carried out by regulatory authorities in compliance with the permit conditions and regulatory requirements.

In 2019-20 period, we had a violation notice from NCR (North Central Region) Appellate Authority for this project. In Dec 2019, the local environmental compliance authority inspected CTP 14 project at the time when a construction ban was imposed by honorable Supreme Court of India as a precautionary measure to counter the peak air pollution level in NCR region in winter season. They issue a violation notice for lack of dust suppression and loose soil containment measures at site with a penalty of appx 6,666.00 USD. Site management immediately rectified the issue with suitable prevention and mitigation measures and informed the local government vide an affidavit and requested for the waiver of the penalty amount. After due verification, the penalty amount was waived.

6 Environmental Benefit

This comprehensive waste management program has many environmental benefits with respect to material circularity, carbon reduction through reduced disposal requirement and enhanced life cycle of material, local habitat conservation through rehabilitation of topsoil and prevention of degradation of land habitat through decrease land area requirement for disposal.

Also, food waste is being disposed through Pig Farm as feed material and greatly ensuring the food chain balance. Comprehensive reuse of excavated soil, crushed waste concrete and other aggregates greatly support material linearity, reduced pressure on local virgin material demand and their avoiding their extraction.

All of these activities have myriad positive impact in controlling pollution, habitat conservation, resource conservation & circularity of materials, and creating a balance in between developmental infrastructure work and environmental safeguard.

LEGAL AND GENERAL INVESTMENT MANAGEMENT & JLL

WESTON INDUSTRIAL CENTRE - GROUNDS MAINTENANCE

AIM

To improve the level of biodiversity within the grounds of the property, develop interaction on sustainability with the tenant businesses, and develop interaction with members of the public visiting the property.



To be achieved through two key approaches:

1. Identifying and installing wildlife habitats that would either benefit from being enhanced /augmented, or habitats that are desirable and appropriate for this property and location, but which are not present.

2. Identifying locations where members of the public are most likely to interact, and identifying suitable sustainable features in those locations, that are likely to encourage interaction.

ACHIEVEMENTS

We successfully identified that grounds maintenance operations could be altered to be more wildlife friendly, while still remaining safe for staff and visitors, and retain an orderly appearance, creating a space suitable for both business and wildlife. Altered maintenance regimes already included checking for nesting birds prior to trimming hedges, and a similar approach for hedgehogs when trimming grass, but were extended to allow a substantial area of grass to grow long, to create a habitat for insects, small mammals, and birds, and allowing native plants to thrive in those grassed areas.

We successfully identified that the following habitats and plants could be provided: a Hedgehog house where the hedge base is not quite dense enough to offer shelter, a bug hotel where there is no provision for solitary bees, an orchard where there is little other



nectar source for pollinating insects, and a wildflower bank where there is otherwise just coarse grass.

We successfully installed the orchard in an area known to be in regular use by the public for dog walking, which has resulted in interaction and positive feedback by the public, enabling ongoing conversations about sustainability, biodiversity, and old English fruit cultivars.

IN DETAIL

The aim of the project was to combine the installation of new biodiversity features, enhanced sustainable maintenance regimes, and engaging with tenant businesses and members of the public.

To do this we planted a new Orchard using historic cultivars of fruit trees, hand built a bug hotel, installed Hedgehog houses, allowed a large grass area to remain uncut as a semi wild area, sowed a native wildflower meadow, and planted six native trees.

These features enhance an already inviting open space that provides a fantastic working environment for the staff and visitors, making a positive difference to their quality of life. The inviting nature of the grounds, and the fact that it's surrounded by residential areas means that it's used extensively by local dogwalkers, who we encourage, as we recognise that this is an important local service that we can provide, for the benefit of their health and wellbeing.

We wanted to ensure that this space is not simply managed to achieve a tidy finish, but also for the benefit of wildlife. This will help increase the level of biodiversity on the site, as well as helping L&G achieve our goals and Policies in relation to sustainable living and working.

Legal & General are invested in improving sustainable working as well as increasing biodiversity, and work closely with our partners - Bellrock as Managing Agents, and in turn Mitie Landscapes as our Grounds Maintenance providers – while funding these initiatives through our Tenants Service charge with the full support of those tenant businesses.

We have not established a baseline for biodiversity at Weston Industrial Centre, and so we're not able to quantify an increase in biodiversity, but are exploring ways of gathering clear data in order to record the subsequent increase, and devise a planned approach to continuing on this path.

Despite not having a baseline level for biodiversity,



the quantity and variety of new habitats installed and maintained here can leave little doubt that the wildlife has benefitted and will continue to benefit. In addition, the positive feedback from the staff working for our tenant's businesses has been very positive, and confirms their support for making these improvements.

As the new habitats mature, they will become increasingly useful for the target species, as well non-target. This is based on the fundamental principal of interdependence of species within an ecosystem – for example fruiting trees relying on pollinating insects,

which are relied on in turn by birds for food, which are relied on by fungi for nutrients, which are relied by the original trees for a healthy mycorrhizal relationship.

Perhaps the most innovative feature is the orchard, which uses using historic cultivars, and has a wide range of fruiting trees - from plum, through apples, and even Medlar, a fruit much used in the Middle Ages for liqueur! We'll be encouraging our tenants, visitors, and the public, to take advantage of these fruits, which will all be maintained organically.

We believe the innovations here can be replicated in many other places, and we're actively promoting what we do here to our colleagues across the country, as well to other organisations through social media.

While working on this ongoing project, we learned about new and engaging ways to achieve our goals, and are working to continue innovating in this area. Future projects may include an Interpretation Board for the orchard, to map out which tree is which cultivar, and the history of each cultivar, plus engaging with the local school by offering the orchard as a learning tool for the children.

We're also exploring further innovative ways to increase biodiversity here.

This may include a Phase 1 Habitat Survey to fully map the flora and fauna present now, which would enable us to plan future improvements and management for a sustainable future. We're also exploring the possibility of installing a wildlife pond which would bring a new dimension for species found on site.



THE MALL AT CRIBBS CAUSEWAY

SUSTAINABILITY AND INNOVATION IN SHOPPING CENTRE WASTE MANAGEMENT

AIM

The Mall at Cribbs Causway's aim was to improve and develop innovative ways to manage waste and ensure the most cost effective and efficient solutions are implemented. The centre's priorities were;

1. To ensure that zero waste was going into landfill by segregating as much waste in-house as possible and choosing environmentally friendly treatment options for all grades
2. To introduce new innovation to reduce both the amount of waste leaving site but in addition reduce the number of collections so as to save cost and reduce CO2 footprint.
3. Provide new solutions to deal with Coffee Cups and Coffee Grounds
4. To continuously improve recycling rates in line with realistic medium and long term targets.

In order to achieve our project aims, we aimed to firstly examine our own existing culture as well as that of the tenants and employees. Full stakeholder engagement in the planning and implementation was imperative to the project's success.

ACHIEVEMENTS

1. Implementation of the Don't Waste system to achieve a position of accurate and transparent data, track every load leaving site from a compliance perspective and improve reporting and analytics.
2. Zero waste to Landfill - Since project commencement no waste has been sent to Landfill.
3. Introduction of the Advetec X03 aerobic digester, reducing waste put into it by approximately 67%. This reduction has been

focussed on the General and Food Waste Grades.

4. Further reduction has been achieved through a circular initiative whereby coffee grounds are repackaged as compost and distributed locally to the community for use in gardens
5. Although this has been through COVID, using previous data we are able to show reduction in number of lifts leaving site correlating to substantial reduction in our CO2 footprint.
6. The reduction of waste on-site has been measured using on-site scales (volume in, less volume out) and recorded and verified using the Don't Waste System.

We believe that the centre is one of the first in the UK to be able to report "Avoidance" as a sustainability metric.

IN DETAIL

What Did the Project Involve Doing?

The project involved Implementing waste management practices, systems and initiatives that would make substantial improvements to the centres environmental footprint in a cost effective and sustainable manner. We did this by:

1. Appointing a Waste Champion to drive the initiative.

The manager is responsible for project implementation and for ensuring continuous improvements for the future.

2. Analysing current waste streams in order to establish the following:

We analysed whether the best waste hierarchy options were being followed in terms of treatment choices and destinations, whether sufficient

segregation was in place and if any improvements could be made which would lead to more favourable environmental outcomes.

The Analysis

This analysis revealed that improvements in the following areas would lead to major environmental improvements:

General Waste – The largest category in terms of waste volume, general waste, was going straight to incineration for energy recovery. Food waste was being collected in wheelie bins and transported for treatment by Anaerobic Digestion. The decision reached was to find alternate solution to reduce both General Waste and food onsite reducing cost of disposal as well as CO2 emissions. This was implemented by installing the Advetec X03 Machine – now in operation from October 2020. It was felt that opportunity existed to drive improved cardboard recovery through tenant engagement so as to reduce costs and improve recycling ratios.

Also through benchmarking, it was also established that the cardboard rebate rate was too low.

There was in addition, substantial amounts of coffee grounds and cups going into our general waste stream and therefore we implemented initiatives to recycle these. Opportunities existed to improve compacter lift efficiencies – maximise tonnage before requesting a collection, thereby reducing number of lifts required, saving on costs and CO2 emissions.

3. Proactively working with waste management stakeholders to facilitate the strategy

The centre took a more proactive approach in working with our management, staff, tenants and supply partners to implement this totally new waste management strategy on site. Analytics from the waste management system were reviewed and actioned. The appropriate colour coded waste receptacles to separate the existing and new waste streams correctly per identified strategy were provided. New grade destinations and treatment protocols were actioned. New rates negotiated. We implemented ongoing education to employees and tenants who will be handling waste on a daily basis, by introducing clear and colourful waste requirements documents, source separation posters and signage.

4. Implementing a new waste management system.

We implemented the Don't Waste System as part of our sustainability campaign. The system provides independent, integrated and optimized waste management control systems and services. This system is designed and established to check, record, regulate, supervise, authenticate, report and (if necessary) restrict on-site waste activities.

The Results

All waste transactions are now generated and confirmed via the system so that all control requirements can be met. All waste duty of care aspects are now controlled via the system for every



load leaving site. Alert functionality warns for any imminent document expiry and audit screens prompt for all paperwork outstanding to close of data on all transactions. Data is tracked and recorded to actual treatment destinations and classified per the outputs. Dashboards allow for monitoring of real data and facilitate the management of and focus on areas targeted for improvement.

Environmental benefits of the data (per grade class and treatment options) are quantified and displayed as an incentive and to align efforts to maximum environmental benefit. The environmental and cost savings to date have been significant.

Why Did You Do It?

The Centre felt that our previous waste management strategy was not proactive in delivering or implementing the centre's sustainability and environmental visions. The Mall at Cribbs Causeway took a proactive decision to empower the waste management team and invest in new innovation, a system, toolkit and infrastructure to fulfil our vision of continual and sustainable improvement.

What Did It Cost and Where Did the Money Come From?

The project cost is expected to be cost neutral. Waste mass and volume reductions through use of the Advetec X03 Aerobic Digester will reduce transport and incineration costs. Use of the Don't Waste 'Warms' application and software package, combined with the Don't Waste retailer engagement strategy will drive efficiencies in segregation at source and therefore further waste being diverted from the general waste stream, potentially generating additional revenue from waste rebates.

If Quantifiable, What Did the Project Achieve in Terms of Sustainable Development, Economy, Environment and/or Equity?

We are not expecting any significant savings through this project because there are cost implications for the hire of the Advetec X03 and the fee for Don't Waste. . We are focused on the environmental benefits from increased recyclable recoveries, reduced transportation, - as this in itself is an achievement. Developed a solid platform for

| | Tonnes per lift | | Improvement | Annual Saving |
|--|----------------------|----------------------|-------------|-------------------|
| Compactor lift efficiencies May/June 21 vs 2019 | 2019 | May/ June21 | | |
| North Yard | 4.75 | 6.03 | 27.08% | £1 159.78 |
| South Yard | 6.49 | 7.88 | 21.35% | £914.21 |
| | | | | |
| Food Waste | | | Qty/ annum | Annual Saving |
| No food waste bins collected anymore | | | 2208 | £17 774.40 |
| | | | | |
| Avoidance | | % to total waste | Tonnes | Annualised Tonnes |
| Waste Avoided through X3 Digester May/June 21 vs 2019 | | 21.30% | 31.669 | 190.014 |
| | | | | |
| Cardboard | 2019 | May/ June21 | | |
| Cardboard recovery improvement | Ratio to total waste | Ratio to total waste | Improvement | |
| | 23.93% | 26.49% | 11% | |

maintaining performance and driving targeted improvements in recyclable materials going forward.

There are however tangible improvements in efficiencies, costs and volume of waste leaving site as outlined in the table below.

Who and What Benefited?

The centre, its stakeholders and the environment.

Longer Term Benefits?

The platform has been set for ongoing and continuous improvements.

Was There Anything Innovative About the Project?

Use of unique systems, data intelligence and apps. We are the first shopping centre in the United Kingdom to use aerobic digestion as an avoidance opportunity and one of the 1st Centres across the UK to be using Avoidance as a sustainability Metric.

Can Other Organisations/Communities Benefit From Implementing Your Methods?

Yes

What Did You Learn From the Project and are You Planning Any Further Development?

Positive feedback from the staff and tenants shopping centre has been received as the centre is not only achieving its own environmental goals, but also helping the individual organisations to adhere to and achieve their own environmental objectives and policies. Additional initiatives are being addressed as we speak, the culture developed is one of continuous improvement.

The Don't Waste system and service provides continuous information and reports to keep goals on track and to highlight additional areas of improvement. All treatment outputs off site are monitored to ensure we are aware where all waste is going.

We are also striving to generate a new culture for positive environmental impact and are excited and dedicated to make this a reality and become a flagship for other shopping centres.

MARLEY

CRUSHED RECYCLED WASTE

AIM

The project was designed to reduce waste removal from site by crushing and recycling internal process waste at site.

ACHIEVEMENTS

The main project goals achieved so far are:

1. A reduction in raw material use
2. 100% waste removal from site.
3. Reduced transport movement resulting in lower CO2 emissions

IN DETAIL

The project was designed to reduce waste removal by crushing and recycling internal process waste at site. This would also allow for a reduction in raw material use as the recycled aggregate would lower the amount of sand added into the product.

Each year over 7000 tons of waste process material has been generated at site which requires removal by a waste contractor. The material is in the form of concrete tiles, concrete pre-mixture and oversized sand. This material is feasibly fit for crushing via mobile plant and returning into the process.

The project started by setting up a storage location for the waste material. Designated storage bays were purposely built for pre and post crushed aggregate. As the crushing activity would take place on a quarterly basis, this would allow enough material to build up over a 3 monthly period.

Marley Ltd Concrete Tiles - Concrete Tiles



A mobile crusher would be brought to site and set-up in the storage location. The crushing activity would commence until all stored waste had been used up. As the post crushed aggregate became available, this was used to reduce the amount of sand being added to the pre-mixture for making the concrete tiles.

The costs, provided and paid for by Marley Ltd, are as follows:

- Storage bay blocks £20,000
- Mobile plant and crusher for one quarter £17,000
- Previous waste disposal costs £100 per load
- Cost for sand delivery £17.5 per ton

The main environmental benefits seen from the project so far are:

- 100% process waste reduction
- Raw material reduction

- In one quarter, 160 less transport movements were made by hauliers
- In one quarter, 2000 tonnes less of CO2 through fuel usage

Further benefits of the project:

- Cost savings for Marley Ltd
- Customer returns on defective tiles are recycled and replaced. Tiles are returned during customer collections to site.
- No affect on product quality

Longer-term, Marley Ltd would be looking to expand the project and look to source similar waste streams from local businesses that can be re-used into products.

Marley Ltd has an excellent compliance record with SEPA.



MHM PLANT

A GREEN SITE POWER PACKAGE - MHM SOLAR HYBRID SYSTEM

AIM

This project was initially driven by a request from a national house-building organisation that needed to provide continuous power 24 hours a day 7 days a week to a housing development based in Aberfan, South Wales.

The traditional method of providing power would be from a fixed speed diesel-fuelled generator. With the project set to last for three years, the client was concerned about the quantity of diesel fuel that would be used and the number of consequential carbon emissions. They were also concerned that a standard set would need regular refuelling and frequent servicing which would add to costs of the contract.

The aim put to MHM was to reduce costs and carbon emissions throughout the three-year programme, whilst still providing continuous, stable, clean power

In response, MHM engineers developed a hybrid power generator combination system that

incorporated a fixed panel solar kit, supplemented by an emission-free 24kVA/ 60kWh Battery Pack, supported by an MHM 60kVA diesel generator fuelled via an MHM environmentally safe 'Fuelbuddy' 2000 litre fully bunded fuel delivery and storage tank.

The power combination was set up on-site ready for immediate use.

ACHIEVEMENTS

The MHM Solar Hybrid-Gen combination was delivered and installed on the clients' site and immediately put into operation. MHM engineers regularly monitored the combination's performance and recorded its' achievements over a set period of time.

This is what was recorded:

The engine running hours averaged 6.25 per day; 9.5 hours in winter and 3 hours per day in the summer. Therefore fuel usage per 24 hours @ 8.6 litres per hour = 54 litres. Fuel costs @ 0.95 per litre = £51.00.

| Features | Benefits |
|-------------------------------------|--|
| 24kVA / 60kWh battery power storage | Suitable for large power requirements on site |
| Lithium iron phosphate battery | Heavy, duty, robust & proven reliability |
| Battery charge level indicator | Clearly shows battery charge status (ie. low or full) |
| (AGS/S) Auto generator Start/Stop | Connect to generator for auto Start/Stop facility |
| Fork pockets and lifting eyes | For flexible and safe lifting on site |
| 1 x 63A sockets (400V) | Easy plug & play connectivity |
| 63A (400V) recharge cable | Recharge from the mains, a suitable size generator or both in only 3 hours |
| Solar panel compatible | Connect to a solar kit for renewable power recharge |



| | | | | |
|--|--|------------------------|---|-----------------------------------|
| GENERATOR RUN HOURS Per day | Tradition diesel generator only set-up | 24 Hours | 17 HRS SAVINGS PER DAY | 6205 HRS SAVINGS PER YEAR |
| FUEL USAGE PER 24 HOURS (@ 8.6 litres per hour) | MHM Solar Hybrid Battery Diesel Technology "A Green Tour Site Package" | 7 Hours* | 146 Litres SAVINGS PER DAY | 53,290 Litres SAVINGS PER YEAR |
| FUEL COSTS @ £0.95 per litre | Tradition diesel generator only set-up | 206 Litres | £140.50 SAVINGS PER DAY | £51,282 SAVINGS PER YEAR |
| CO₂ EMISSIONS 1 litre of fuel burnt = 2.65kg | MHM Solar Hybrid Battery Diesel Technology "A Green Tour Site Package" | 60 Litres | 387 kg SAVINGS PER DAY | 14.1 tons SAVINGS PER YEAR |
| GENERATOR SERVICING COSTS Generator engine service every 500 hrs (every 11 weeks) @ an average of £300 per visit | Tradition diesel generator only set-up | £197.70 | REDUCED FROM 17.5 TO 5 PER YEAR £3,750 SAVING | |
| | MHM Solar Hybrid Battery Diesel Technology "A Green Tour Site Package" | £57 | | |
| | Tradition diesel generator only set-up | 546kg | | |
| | MHM Solar Hybrid Battery Diesel Technology "A Green Tour Site Package" | 159kg | | |
| | Tradition diesel generator only set-up | 17.5 SERVICES = £5,250 | | |
| | MHM Solar Hybrid Battery Diesel Technology "A Green Tour Site Package" | 5 SERVICES = £1,500 | | |

CO₂ emissions were calculated at 1 litre of fuel burnt = 2.65kg = 143kgs. Engine servicing was needed every 500 hours (every 11.5 weeks) at an average price of £300 per visit = 4 services at year @ £1200

Savings Achieved Per Day (per year):

Generator run hours saving = 17.75 hours per day (6479 hrs) Fuel usage saving per 24 hours @ 8.6 litres per hour = 152 litres per day (55,480 litres). Fuel cost saving @ 0.95p per litre = £146.70 per day (£53,472). CO₂ emissions saving 1 litre of fuel burnt = 2.65kg = 405 kgs (14.8 tons). Engine service requirements reduced from 17 to 4 = £3900

To summarise Fuel savings of 55480 litres (£0.95 per litre) = £53472.00 per year, plus a reduction in CO₂ emissions of 14.8 tons per year. [Note all figures based on the generator at 50 % load]

IN DETAIL

MHM are UK based supplier of power generation, solar-hybrid-generators, fluid storage, lighting towers and product-related accessories to the UK and Ireland rental markets. The company was incorporated in February 2010 and has its' headquarters in Port Talbot, West Glamorgan. MHM is closely aligned with an Italian manufacturing company, Tekno Proget S.R.L, a leading company in the design and production of high-tech generators and welding sets. They began manufacturing in 1990 and focus on quality and using the latest technology. Neither company has ever been subject to any third

party actions and both have a good reputation in their respective countries.

The MHM sales and marketing teams remain very close to their client base and have an excellent reputation for having a flexible approach to individual requests. They are also very environmentally conscious. MHM

has stated that their eventual aim is to deliver a range of power generation machinery that severely limits, and possibly eliminates, the use of diesel entirely by concentrating developing systems that are powered by renewables, hybrid and battery-powered systems.

Increasingly, construction contractors are challenging their rental partners to provide them with more sustainable systems to power their sites. The consequences of air and noise pollution on construction sites are coming under ever-increasing scrutiny. Figures show that in London construction sites are responsible for around 7% of harmful nitrogen oxide emissions, 14% for PM_{2.5} and 8% of PM₁₀. It is understood that 25% of these emissions are due to the continual running of temporary power generators. [<https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>].

NRMM (Non-Road Mobile Machinery) regulations stated that from 1st January 2020 all constant-speed engines, such as those typically found in generators, are required to be at Emissions Stage V throughout London. In addition, the aim is to have zero emissions by 2040. Other UK cities have plans for their own low-emission zones; with the result that running diesel-fuelled machinery is coming under close examination in the coming years.

To continue their advance into using environmentally acceptable power, MHM entered into an arrangement with MIPV, a South Wales based manufacturer of innovative thin-film solar panels.

MIPV is a division of the BIPV Group. The company was established in April 2015, following five years of collaborative research between Tata Steel LCRI (Low Carbon Research Institute) and Swansea University, with support from the Welsh government. This joint venture between MHM and MIPV is set to develop bespoke solutions to meet the sustainable energy a site needs.

With their experience in the construction rental markets, MHM was aware that demands for power on-site can be at peak times quite considerable. Therefore they decided that a package of power products needed to be combined to ensure that power was always available.

In response, MHM set about building a 'Green Site Power Package' that combined solar, battery with a power generator, alongside safe fuel delivery and storage in one complete package. The principal aim was to utilise the emission-free battery power full time, with the diesel generator is only ever used on-demand, when the battery levels are low, i.e. in poor weather conditions or winter months etc.

To begin the Green Site Power Package, MHM fitted MIPV solar panels to the clients' existing site cabins, in turn, they then linked the panels to their own brand 'BP-4 Batpack,' a 24kVA/ 60kWh emission-free battery power pack.

The BP-4 Batpack is a heavy-duty, robust and reliable power source driven by a Lithium iron phosphate battery. When demand is high, the battery needs regular re-charging with the solar panels designed to be the main source of the re-charging operation. However, MHM's research demonstrated that there would be a requirement for a standard diesel generator as back up to charge the batteries. As the BP-4 Batpack could be fully re-charged in just three hours and with the solar panels

being the first option, MHM was confident that the generator would only be in operation sporadically.

Ground contamination caused by careless refuelling or inadequate storage facilities can be an issue. Therefore MHM paired the generator with one of their 'Fuel Buddy' fuel tanks. The Fuel Buddy is an IBC transportable fluid storage tank with a fully bunded base which collects all spilt fluids, eliminating any possibility of ground contamination.

When fully set up and operational the Green Site Power Package immediately delivered some impressive cost savings and emission reductions.

Over a twelve-month period the generator ran hours for 9.25 hours during winter and just 3 hours per day during the summer - standard generator would be running 24 hours per day in all seasons. Fuel usage per 24 hours was 54 litres - a standard generator would burn 206 litres. With CO2 emissions calculated at 1 litre of fuel burnt, the MHM combination produced 143kgs of CO2, whereas a standard generator would emit 546kgs. Engine servicing was also reduced, saving the operator approximately £1200.00 in the year. In addition, when the battery takes up the power there is zero noise pollution.

To summarise – The MHM package achieved fuel savings of 55480 litres which could reduce fuel costs upwards of £50,000.00 per year. The reduction in CO2 emissions was 405kg, 14.8 tons per year and zero fuel spilt.

The MHM Green Site Power Package can be varied in size and output to suit individual client requirements. It offers genuine emission reductions which are particularly important to assist the UK construction markets to bring a greener future to their projects.

For more details call **MHM TODAY** on **0808 168 9099**
Email sales@mhmplant.com or visit us at www.mhmplant.com



MILESTONE INFRASTRUCTURE

SCIENCE VALE CYCLE NETWORK, ROUTE 1

AIM

Milestone, on behalf of Oxfordshire County Council and Vale of White Horse District Council, are creating and upgrading cycling routes across Oxfordshire as part of the Science Vale Cycle Network project. The project will encourage the use of more sustainable modes of transport in the county, improving air quality and reducing carbon emissions in line with the County Council's overarching climate change strategy and Milestone's Care for Life value.

Route 1 of the cycle network runs between Wantage and Harwell Campus – a science and technology business park currently supporting research into Covid-19 vaccines. The Route 1 works focused on upgrading 6.5km of narrow, largely unconsolidated paths into a wider, surfaced, formalised cycling network with improved signage. In addition to specific works including excavation, levelling and surfacing, a 25m long pre-fabricated bridge made from sustainable EU timber was installed over Ginge Brook to replace what was previously a short, narrow bridge with a steep incline to one side.

These works also had to align with Milestone and the client's core values for caring for the environment and minimising adverse impacts.

ACHIEVEMENTS

These works were a collaboration between Oxfordshire City Council, Vale of White Horse District Council, Milestone and key supply chain member Fergal Contracting Company.

As part of the works, a significant amount of aggregates would need to be imported. The site team identified a carbon and a cost saving, by using virgin aggregates only in the top 150mm of the cycle

way, and using recycled aggregates for the remaining build up depending on levels. The new design used 996m³ of recycled aggregate instead of virgin type 1. This also provided a carbon saving of 73% and the client in a cost saving of £19,920 for the client. This carbon and cost saving was additional over the savings already achieved through choosing a design using unbound material over more carbon intensive bound materials such as concrete.

To ensure the projects carbon emissions were minimised as far as practicably possible, the emissions of the site compound, welfare facilities and offices has been at the forefront of the projects teams mind from the onset. The facilities have been powered by solar throughout the construction phase. This has been achieved through the use of a 'Solar Pod' procured through Sunbelt Rental. This was chosen as an alternative to a standard diesel generator, as the solar pod is a hybrid solar power and diesel generator with battery storage.

The solar pod was positioned in the open, facing south. It powered 4x cabins including offices and welfare units. It provided 95% of the sites power consumption, with the diesel generator typically running for only 1 hour per week.

Using the solar pod, the site saved 430 litres of diesel and 4.9 tonnes of carbon per week. This also resulted in a significant benefit from noise reduction to the local area and had a positive impact on wellbeing nearby residential properties compared to a 60kVa diesel generator.

The bridge was designed to avoid the use of hardwood from tropical rainforests, instead it used sustainable European hard wood timber for the bridge deck and parapets. This sustainable timber had a lower carbon footprint when compared to alternatives of steel or aluminium parapets.



Only recycled plastic way markers were used on the route, and waste to landfill was minimised by re-using excavated soil for fill and landscaping. Approximately 200m³ of soil was re-used, which saved the client money in disposal costs and importing replacement material, and prevented 50 vehicle movements on local roads. When considering importing excess soil and the associated vehicle movements, reusing excavated soil on site saved another 5 tonnes of carbon emissions.

The chosen route for the cycleway navigated existing trees and earthwork footprints to minimise tree clearance and prevent negatively impacting biodiversity. Retaining existing trees was a key consideration for this route due to it being situated in the North Wessex Downs Area of Outstanding Natural Beauty.

IN DETAIL

The significant changes to site set up and design saved 10 tonnes of carbon and had substantial cost savings that can be easily applied to many other similar projects. These changes also aligned with Milestone's green values and the clients overarching climate change goals.

The project involved establishment of site welfare facilities, excavation to existing footpaths, installation to finished footpath level, piling, installation 25m bridge, completion of tie-ins between new and existing surfacing and installation of signs & bollards.

A significant amount of work was near Ginge Brook, which involved a sensitive methodology for working near a watercourse, silt prevention measures and working under an Ordinary Watercourse Land Drainage Consent granted by the district council.

The working relationship between Milestone's projects team and Oxfordshire has been developed, and this has opened additional opportunities for innovation in the future. The whole team involved has gained a significant amount of experience in sustainable alternatives and how simple and easy they can be to implement. This has also bolstered both organizations' reputations locally for sustainability and innovation.



THE MORGAN QUARTER

YEAR 1 - 9 - DELIVERING ELECTRICITY CONSUMPTION REDUCTIONS

AIM

Over the period of the last nine years as Centre Manager to the Morgan Quarter I have strived to deliver reduced electricity consumption to the common parts in a highly complicated Grade 2 listed property.



ACHIEVEMENTS

From 2012 to 2020 electricity consumption has been reduced by 50% All staff are engaged in being responsible for helping in making these reductions Any work that has been initiated to help with reductions have had a return on investment within two years Savings (20%) have been attained over this period with the introduction of efficient light bulbs and movement sensors

IN DETAIL

The retail environment has been challenging over the last decade and therefore it is essential that operational costs within retail destinations are as

streamlined as possible. In addition to this the challenge to be more sustainable has also been at the top of the agenda for roughly the same period of time.

At previous schemes I have managed I have been able to combine both these objectives successfully

but only for the period of my management(usually no more than four years).

The challenge has been if I can maintain this reduction of electricity consumption beyond four years then that will be some achievement.

How I can gone about this has involved the following:

- Detailed analysis of our half hourly consumption data to read the “pulse” of the Morgan Quarter with the goal to slow it down
- Engagement with the staff showing them how their actions (e.g. leaving lights or sockets on, when not in use) influences the electricity consumption
- Introducing movement sensors to areas that either had a manual switch or a time clock controlling the area
- Implementing a planned replacement of every light to LED. We are only into Year 3 of a 7 year plan to keep installation/repair costs on the service charge consistent
- Obtaining ISO14001 which has developed are overall understanding of our management and operational practices towards the environment.



In total we have been able to achieve a 50% reduction which is no mean achievement in an environment that is centuries old (one part was built in 1857 with the last building built in 1905. I don't believe we have hit the bottom in achieving more reductions, this will be through the LED replacement and our culture of continuous improvement.

All of this has been overseen and driven by one person, myself, where in other similar schemes consultants and outside contractors would have been instructed to deliver this.

This proves if you have the passion you can achieve anything and who else is better than the person who knows the property intimately. Our next step is to make the scheme net carbon zero by 2030 and in doing this project has put us ahead of where we want to be.

The Morgan Quarter for your information is a mixed use development spread over six floors (including basement) in a grade 2 listed estate in the centre of Cardiff which is home to 65 shops (80% of which are independent), 56 private apartments and 35 offices over a square footage which is just under 300,000.

To make the estate more challenging it does not consist of one building but 17 that has seen a wide ranging changes of uses over the past two centuries.

MORGAN SINDALL

VISTA

AIM

Ofgem funding is currently being utilized by Scottish Hydro Electric Transmission Limited (SHE Transmission) to improve Scotland's transmission network's visual impacts on the nationally designated landscape of Cairngorms National Park. This VISTA (Visual Impact of Scottish Transmission Assets) project represents an opportunity to reassess the historic electricity infrastructure within close proximity to communities, National Parks and National Scenic Areas, and to conserve and enhance the natural beauty, wildlife and cultural heritage of this important Scottish landscape.



Figure 1 Wood ant nest after translocation

Through VISTA, Morgan Sindall, working on behalf of SHE Transmission, are removing overhead line infrastructure north of Boat of Garten and installing underground cables to replace two sections of current 132kV overhead line. The underground cable spans 11km between Docharn (Boat of Garten), to

Nethy Bridge, meaning they are located in areas that attract some of the largest numbers of visitors to the National Park.

This application's aim is to highlight the environmental best practice Morgan Sindall are carrying out in order to go further to mitigate any current and future impacts of this construction. The application highlights construction methodology used which has minimized disruption to three key sensitive ecological receptors; invertebrates, flowering plants, and the water environment.

ACHIEVEMENTS

The hairy wood ants onsite are on the IUCN red list and are a priority species within the Cairngorm National Park where the project is situated.

Morgan Sindall with the assistance of Mabbett who offer the onsite Environmental Clerk of Works role developed methodology and toolbox talks to train site staff on translocating nests.

These nests were moved with an excavator to minimize disturbance to the nest. This good practice saved 16 wood ant nests which equates to approximately 160,000 individuals, this practice will maintain the local population of this species.

Morgan Sindall identified that the wayleave was to cross areas of high flowering plant species which are locally important for a range of rare invertebrate species. Morgan Sindall are undertaking stripping

works retaining the flowering plants within turfs for reinstatement.

This will limit habitat loss of 3500m² and maintain important local biodiversity. To minimize disruption to the water environment when laying cables under small to medium watercourses a system was developed on site by Morgan Sindall to create pre-cast concrete cable ducts to install directly onsite for 22 watercourses.

This reduces pollution risks from using concrete within the watercourse, reduces impacts to the water environment and reduces waste.

install the new underground cable and removal of old infrastructure.

Morgan Sindall have a personal ambition and drive to carry out these projects in order to go over and above the minimum planning statutory and regulatory requirements on this project. The cost to implement these best practices are negligible and can purely be seen as a modification of normal practices in order to gain greater results and drive better practice.

Off the back of these activities, Morgan Sindall have invested in procuring consultancy support from Mabbett & Associates to further investigate how they



Figure 2 Flowering plants kept in turves (left) with pollinators still utilising turves prior to reinstatement (right)

IN DETAIL

The VISTA project involves installing approximately 11km of underground cable so 47 132kV pylon towers can be removed.

This work is taking place within the Cairngorm National Park as part of the VISTA initiative for which Ofgem has given transmission companies £500 million to reassess historic infrastructure. The project itself will cost approximately £31 million to

can work towards the aspiration of biodiversity net gain on all of their projects.

Hairy Wood Ants Hairy wood ant nests, although aren't afforded legal protection, do contribute to local biodiversity and are a species noted in the Cairngorm National Park priority species list they are also a IUCN red list species found only in suitable habitats.

The procedures to translocate wood ant nests is an emerging and novel practice, as it does not

commonly occur, Morgan Sindall used what known guidance there was to develop their own best practice.

This involved firstly;

- 1) micro siting works where possible in order to move access tracks and cable routes away from as many nests as possible, and
- 2) translocate any nest which would still fall on the 30m wayleave.

The best practice for this involved:

- Locating existing ant nests, both those that had to be moved, and those which may lay in the surrounding areas.
- For those nests that had to move, a suitable location was found as close to its original site as possible (<10 to 15m), in an area where the ants would have the same habitat, yet not too close to existing ant nests to avoid competition, and an area where no future works would disturb the nest.
- Once a suitable area was found, the top layers of vegetation were removed from an area the same size as the ant nest.
- Next, the ant nest is picked up with the bucket of an excavator in one movement, causing

minimal disturbance and placed on the bare ground in the new area.

- Finally, the translocated ant nest is marked, protected and monitored for the coming days to make sure the ant nest is still viable.

The long-term benefits of this translocation is to minimise destruction of colonies, aiming for no net loss, sustainability and ensure these species are maintained locally to continue to contribute to the local biodiversity.

Flowering plants

Morgan Sindall also, through guidance from an onsite environmental clerk of works (ECoW), were able to retain turfs for reinstatement which hold high ecological value (containing a variety of scarce flowering plants).

This ECoW highlighted this to the Cairngorm National Park Authority through local biological interest group and instigated a meeting with members to outline plans to minimize impact and retain biodiversity, hence conserving the habitat and the species it supported.

The best practice for this involved:

- Stripping the existing vegetation and maintaining the flowering plants within the turfs.



Figure 3 Pre-cast concrete duct blocks manufactured on Morgan Sindall's laydown area (left) and the block in situ being placed underneath a minor watercourse (right)

- Placing these turfs just to the edge of the 30m wayleave, allowing pollinators to continue to find and utilize them.
- Protecting these turfs from disturbance and degradation.
- Placement of these turfs back in the local area on top of the 30m wayleave during reinstatement to maintain this local flora and seedbank.
- This has much great benefits than removing all vegetation and topsoil's and reinstating with an alternative seed mix.

Water Environment

Morgan Sindall have developed an innovative system specifically for this job to minimize wet concrete being poured in an open cut watercourse where ducts need to be sealed incase the watercourse erodes the ducts.

Morgan Sindall manufactured the pre-cast concrete units at the site compound meaning this best practice ensured:

1. Concrete wash out could be controlled better with centralized wash out facilities,
2. Less onsite traffic as concrete wagons could pour the concrete at site compound without travelling onsite to where the concrete needed to be poured
3. Less risk in terms of pouring wet concrete where the watercourse if pumps failed/ watercourse rose which could have washed out wet concrete into local watercourses.
4. Less time over pumping reducing fuel consumption as pre-cast units could be installed and backfilled instead of waiting for wet concrete to dry.

The practice of pre-cast duct installation has clear benefits both environmentally and equity related and has been noted as innovative by the client (SHE Transmission). This practice will be used for future cable projects of this nature by Morgan Sindall and has been raised internally as good practice. Morgan Sindall have also identified the current material specification included CBS (cement bound sand) which is known to elevate the surrounding pH due to cement leachate have developed alternative design to remove the requirement for CBS replacing with inert material.

By raising the awareness of these practices various stakeholders such as the Cairngorm National Park Authority, SEPA (Scottish Environmental Protection Agency) and SNH (Scottish Natural Heritage) can learn how infrastructure projects can minimize impact and leave lasting benefits to the local communities these projects aim to improve. Morgan Sindall aim to take the elements of these works further into developing good practice on other schemes in an effort to go above compliance and be a leader in their industry.

The project has achieved a number of benefits in terms of environment and equity including innovative solutions to minimize impact. Local biodiversity, local communities and tourists will benefit from these solutions, ensuring the project carries out its intended purpose of improving long term visual impacts, whilst Morgan Sindall ensure the short-term construction impacts are kept to a minimum by using the above best practice.

MULTIPLEX CONSTRUCTION EUROPE NET POSITIVE BIODIVERSITY

AIM

The ambition of our Net Positive Biodiversity Strategy has been to go beyond the traditional approach of simply protecting the ecological features within the immediate confines of a construction site. By broadening our environmental stewardship beyond the perimeter and ensuring that we leave a lasting legacy of nature-based improvements that deliver a variety of ecosystem services.

The delivery of this ambition has been founded upon two guiding principles:

- Measurement: Using proven scientific methodologies to measure our impact wherever possible
- Engagement: Collaborating with internal and external stakeholders to increase awareness and broaden the impact

Our aim is to deliver enhanced placemaking at the University of Glasgow's campus development.

ACHIEVEMENTS

Through the design process we have incorporated a range of ecological improvements. These include a 'rain garden' Sustainable Urban Drainage System (SuDS), a living-wall and an extensive green/brown roofs. All of which will transform a once inhospitable brownfield site into an ecological corridor with interconnecting blue/green infrastructure.

- Dedicating >80hrs of staff time to volunteering with the local community groups that have



a specific mission related to the natural environment.

- Delivered ≈60hrs of internal engagement to increase awareness of the Net Positive strategy and how it's delivered. For example, our timber procurement policy, which we have achieved 100% compliance with, means that our buildings are not affiliated with unsustainable forestry management and the associated loss of habitat.
- Utilised local expertise such as the Clyde River Foundation to carry out ecological surveys which also supports their school engagement programmes.
- Independently rated as 'Exceptional' in the environment section of the Considerate Constructors Scheme.
- Over a two-month period we have removed more than 30,000 pieces of single-use plastic from our operations, protecting our most vulnerable habitats from manmade impacts.
- Collaborated with academics to investigate the benefits of 'green' hoardings with promising initial results.



Preliminary results show that particulate matter (PM) counts are lower in front of green screens compared to the plywood control screens. Whilst this effect varies, the largest reductions (up to 40% reduction) are seen during the highest particle counts demonstrating the screens' effectiveness. Similar results can be seen for rainfall runoff, with reductions of up to 35%. These initial results appear to indicate that if such an approach was more widely adopted by the industry that it could significantly improve local air quality and reduce the need for manmade drainage systems.

IN DETAIL

Multiplex have been appointed as project delivery partner by the University of Glasgow for the first phase of their £1bn investment to transform the Gilmorehill campus. These works include everything from demolition, excavation, utilities, refurbishment and new build construction. In conjunction with our Client's ambition to transform the estate, as a responsible contractor Multiplex have developed a Net Positive Sustainability Strategy, with one of the five pillars being to deliver Net Positive Biodiversity and Air Quality. In order to deliver this we used the development as a means of communicating environmental issues within the local community and demonstrate the positive impact that the development can bring to the area.

One of our more innovative collaborative projects with the University has been the trial of green screens. The project, the first of its kind in Scotland, has been designed to evaluate the effectiveness of green screens relative to traditional construction hoarding to trap fine particulates (PM2.5) and slowdown rainfall runoff. The project has been funded by the University's Engineering and Physical Sciences Research Council with support coming from Multiplex and other partners.

The second collaboration project with the University was in the form of a research project focussing on the rain gardens. The rain gardens are a Sustainable Urban Drainage System which will form a key part of the development's drainage strategy, managing approximately 50% of the run-off from the >10 acre site. We partnered with researchers with the aim of raising awareness of climate change, biodiversity and ecosystem services for people most interested in or affected by the campus redevelopment, namely those who live and work nearby. As such, two members of the Multiplex team took part in mobile interviews. This involved leading a guided walk around the site wearing an action camera



whilst being interviewed on a range of environmental topics including how water moves through the urban environment and how this is changing with climate change, how the flora and fauna may be impacted and discussion about their favourite part of the site. The output was a series of bespoke video tours that were then placed on an interactive digital 'story-map' of the site providing unique insights into people's experience and relationship with the site and its connection to the natural environment.

We have also sought to engage local community groups that have a shared mission to enhance local biodiversity and habitat. The first of these with a group called the Woodlands Community Garden (WCG). WCG was historically a derelict urban gap site that has since been transformed into a thriving community garden and outdoor community centre. The garden acts as a therapeutic space that helps people to recover from the stresses and strains of everyday life and demonstrates the amenity value that increasing green spaces can have. The garden has over 50 raised beds where local people can grow their own food. Our site team assisted with building planters and a compost pit, weeding and general landscaping.

Another volunteering session saw us work with Friends of the River Kelvin (FoRK), an important local stakeholder with the River Kelvin running adjacent to our site. The session was mutually beneficial with FoRK providing the team an insight in how to sample water quality, using the presence of macroinvertebrates as a positive indicator. In return, the Multiplex team spent the afternoon litter picking around Kelvingrove Park, meaning the litter will no longer pollute the environment, whilst also freeing up FoRK, enabling them to focus on their improvement activities such as tree planting.

In terms of 'designing in' a Net Positive approach we have utilised BREEAM as a means of taking a scientific approach to the impact that our developments will have on local biodiversity. BREEAM uses plant species richness as an indicative measure of ecological value of the assessed site. As

an example, on the James McCune-Smith Learning Hub we have achieved the maximum available number of credits available based on the increase in plant species richness and the benefits that will bring in terms of foraging for local wildlife with over 500m² of green roof and garden being provided.

Other activities aimed at delivering out Net Positive ambitions include:

- Clean Air Day: the Multiplex Sustainability team led a group of volunteers to carry out an air quality survey by using lichen growth/type as an indicator. The results of this survey were subsequently published on the Open Air Laboratories network's database.
- Switching to green-tariffs for all site electricity and setting strict air quality emission criteria for the plant and equipment that is allowed on site.
- Having a procurement policy that only allows sustainability sourced (FSC or PEFC certified) timber.
- Partnering with Clyde River Foundation to carry out macroinvertebrate surveys within the River Kelvin to determine the health of the river before, during and after construction. Though this funding they are enabled to carry out school engagement programmes and regularly engage with >100 schools annually.
- Weekly site inspections by the Multiplex sustainability team to identify any environmental issues on site including those that could potentially have an adverse impact on surrounding ecology

In summary we have taken a holistic approach to habitat and diversity as part of the University of Glasgow campus development works. Not only will the works themselves leave a lasting legacy of ecological enhancement, but our engagement activities will ensure that the local community are better equipped to understand the positive impact that this kind of development can have on the environment.

NANOPOOL GMBH

GREEN PACKAGING REVOLUTION

AIM

100 % biodegradable all-purpose paper packaging with NP Liquid Glass coating

The protection of the environment has always been Nanopool's central topic. NP Liquid Glass is a unique surface coating based on silicon dioxide (SiO₂), an element found in natural quartz sand. The ultrathin protection layer makes any surface repellent against humidity, dirt, and microorganisms, which means, much less water and no polluting cleaners are needed to meet hygiene standards. In addition, the life span of the coated product is generally much longer, which leads to less waste and less CO₂ emission.

Fighting the worldwide waste problem means: avoiding both plastic waste and synthetic paper coatings. NP Liquid Glass now presents a ground-breaking method of providing natural paper and cardboard packaging with repellent properties against humidity, oil, odours, and gas as well as bacteria, mould, or viruses. The effectiveness of the coating against the SARS-CoV-2 virus has just recently been confirmed by medical-technical scientists.

As the SiO₂ layer is fully biodegradable, the paper packaging can still be recycled without limitation after being coated with NP Liquid Glass. In addition, NP Liquid Glass provides such a high-quality protection that the coated paper or cardboard can easily be used several times.

The production as well as the application of NP Liquid Glass are both low priced and simple, so this sustainable solution is affordable for businesses of any size as well as markets with very limited resources and spending capacities.

The environment, the industry, and the consumer can benefit from this innovative packaging coating:

- Less plastic waste
- Less waste separation = saving costs
- Less production of plastic packaging
- Less use of coating materials like aluminium or polyethylene
- No microplastic = environment protection, consumer protection, and food safety
- Highly mould-, bacteria-, and virus-repellent properties of NP Liquid Glass = hygienic customer protection

IN DETAIL

A revolutionary paradigm shift in the packaging market:

100 % biodegradable all-purpose paper packaging with NP Liquid Glass coating

Innovative and awarded technology

The protection of the environment has always been the central topic of Nanopool's unique Liquid Glass technology. The ultrathin protection layer makes any surface repellent against humidity, dirt, and microorganisms, which means, much less water and no polluting cleaners are needed to meet hygiene standards. In addition, the life span of the coated product is generally much longer, which leads to less waste.

This innovation has already been awarded twice with the Green Apple as well as the Green Hero and many other environmental and innovation prizes like the Green Brand Award, Frost & Sullivan, or the NHS Smart Solutions Award.



But the company never thinks of resting on their success: As Liquid Glass is such a versatile an inexhaustible technology, Nanopool keeps developing new application fields reaching from antiviral health care projects to pesticide-free plant-protection.

Saving plastic waste

The packaging industry is currently facing one of the biggest challenges in its own history. With a life span of more than 450 years, each piece of plastic waste adds to the daily growing problem we have to conquer, as the earth and the oceans are slowly drowning under gigantic piles and carpets of waste. While new packaging policies initiate active steps against the massive pollution of the environment, the existence of innumerable companies is threatened by the mandated abandonment of plastic as a material for disposable packaging. BloombergNEF talks about a 10-billion-\$-market that is threatened by the bans on plastic.

We desperately need alternative solutions. But those must meet demands on both hygiene and environmental compatibility and still be financially realizable.

In the highly important subject of waste prevention NP Liquid Glass now presents a ground-breaking method of providing natural paper and cardboard packaging with repellent properties against humidity, oil, odours, and gas as well as bacteria, mould, or viruses. The effectiveness of the coating against the SARS-CoV-2 virus has just recently been confirmed by medical-technical scientists.

Avoiding plastic waste is a highly pressing issue. But biodegradable materials like paper do not meet the requirements of the packaging industry when it comes to hygiene and safety, especially in the

food sector. By adding metals or plastics such as aluminium or polyethylene, conventional coatings transform biodegradable paper into a composite material, which must therefore be disposed of as special waste.

NP Liquid Glass, however, is based on silicon dioxide, abbreviated as SiO_2 , an element found in natural quartz sand. This means, any biodegradable packaging can still be recycled without limitation after being coated with NP Liquid Glass. In addition, NP Liquid Glass provides such a high-quality protection that the coated paper or cardboard can easily be used several times.

A smart solution for anyone

As the production as well as the application of NP Liquid Glass are both low priced and simple, this sustainable solution is affordable for businesses of any size as well as markets with very limited resources and spending capacities.

With no doubt, anyone can benefit from this innovative packaging:

The environment. NP Liquid Glass coating on paper and cardboard leads to:

- Less plastic waste
- Less production of plastic packaging, which means less oil and gas extraction and thus less CO2 emission
- Less use of coating materials like aluminium or polyethylene and therefore less composite material waste
- Less animals have to die by getting caught in plastic bottles or waste or by confusing microplastic with food

The industry

- Saving costs through less waste separation
- Keeping step with the customer expectations for sustainability and legal waste regulations
- More flexibility regarding the designs and application perspectives for paper-based packaging as NP Liquid Glass – other than conventional paper-coating – can be easily applied on packaging of any size or shape, offering manufacturers a completely new freedom.

Customers

- More protection and food safety because no microplastic get into the food delivered in NP-coated paper packaging.
- Hygienic customer protection because of the highly mould-, bacteria-, and virus-repellent properties of NP Liquid Glass.

A paradigm shift in the packaging market

With three-digit billion-figures worldwide, sustainable packaging is the fastest growing sector in the packaging market. However, sustainable packaging always has a catch; it is either not truly recyclable because some kind of synthetic material is involved, or it has shortcomings in safety and hygiene.

NP Liquid Glass is both 100 % sustainable and adds a high-level protection against humidity, dirt and microorganisms to the packaging.

This allows for a huge paradigm shift in the packaging industry, as safety does no longer contradict eco friendliness.

Even bottles made of pure paper, only coated with NP Liquid Glass, are possible. Thinking of the amount of waste that currently floats in the ocean makes it clear how much the world can gain with a technology, that allows natural paper to perform as an all-purpose packaging material.

Flexible like a smartphone

NP Liquid Glass is highly effective on any surface and against innumerable kinds of external stress because SiO₂ polymerizes on the surface and makes it super-phobic. In addition to this passive effectiveness, various active agents can be embedded in the basic product matrix to adapt the coating to the respective customer's needs.



The principle is similar to the way a smartphone works: The product matrix itself gives a very high performance, just like a smartphone does in its default factory state. And just like a smartphone can be used in an even more individual and personalized way by downloading apps, our basic technology can be supplemented with various active agents. This makes our solution very versatile, which is an important competitive advantage, as no one knows which challenges the market will have to face in the years to come. Active agents might be antiviral components, UV-protection, agents that keep away vermins, etc.

Reacting to new requirements, these “apps” can be installed in the basic product matrix very easily. This opens the way for the packaging industry when it comes to expanding into new fields of application.

Invisible and biocompatible

A surface which is coated with NP Liquid Glass does not change regarding its look and feel, nor does the SiO₂ layer affect the material's breathability.

The protection is 500 times thinner than a human hair and cannot chip off. The harmlessness of the technology has been proven in numerous tests and studies. It is confirmed to be 100 % biocompatible, which means, it can be applied on and even inside of the human body. This, of course, also means the coated packaging is fully food safe.

International trading companies as well as organisations have already recognized the benefits of this unique technology and indicate great interest in optimizing their packaging materials with NP Liquid Glass.

NATIONAL OILWELL VARCO

ENVIRONMENTAL ENHANCEMENTS AT GATESHEAD

AIM

Our aim is to reduce our carbon footprint by improving our waste streams at our site in Gateshead.

This includes improved recycling systems, reduction to our energy consumption & reduced material usage on site. We aim to do this by reducing the amount of waste products we produce as a site.

We are going to reduce wastewater from machines, disposal of pallets, unnecessary packaging as well as significant reductions to our internal energy consumption. In turn, the aforementioned points will enable us to reduce transportation to and from our factory which will lead to reduced emissions and improvements to our carbon footprint.



As well as helping the environment, we will also experience cost savings which we aim to reinvest into further environmental improvements. The consensus of our factory overall is that we all need to

do our bit to improve our carbon footprint & help the environment.

Everyone is keen to continue to improve our systems and reduce our waste streams. Further to our environmental savings, we are undertaking a conservation project with the aim of improving our factory grounds as a better habitat for wildlife. This includes the installation of bat and bird boxes as well as insect houses.

ACHIEVEMENTS

The achievement that we are most proud of is that in August 2020 we became the first UK NOV ISE site to become 14001 certified with zero landfill.

We did this by introducing a recycling centre on our site, meaning that we can segregate all waste streams that we generate. Previously, a lot of our waste went into a general waste bin which went to landfill. By doing this, we saved £36,000 in the first 18 months.

We have significantly reduced our energy consumption by installing various improvements. These include LED lighting, machine shutdowns and significant reductions to our water usage by monitoring of our flushing systems. This has saved us thousands of pounds per annum.

We have reduced our oil waste by one third by having it tested on site rather than instant disposal. This will save us around £12,500 per year but also saves on disposal which is a cost to the environment.

All employees on site undertook an in-house training course to educate them on understanding waste streams and their impacts. Due to this, we have grown a culture of responsibility within our workforce to help the environment. It has become engrained into our site's DNA.

IN DETAIL

Whilst undertaking our Environmental Enhancement project, we have implemented many methods of saving on our waste streams.

The main focus on this journey began in February 2020 where previously we had only touched



on recycling systems. Attention turned to 5S implementation whereby a dedicated team was set up with this as a primary focus. We introduced a recycling centre on site in order to segregate wastes into dedicated bins.

Previous to this, many materials had been put into the general waste bin for landfill. By doing this, we have seen a cost saving of £17,000 per year on landfill bins due to having zero landfill. As part of our progression, we then applied for the ISO 14001 certification.

We became the only NOV ISE UK site to become 14001 certified with zero landfill, of which we are very proud. Needless to say, this has a huge environmental benefit not only because of zero landfill but also all of the transportation and emission reductions therefore reducing our carbon footprint.

At this point in time, there was a lack of recognition towards recycling and the environment by many employees. However, as our environmental journey has progressed; recycling and environmental awareness has become engrained on our DNA.

Early 2020, all employees embarked on an internal training programme which helped educate everyone on our improved waste streams. This is something in which we hope people will not only adhere to at work but will take home to practice in their communities.

Visual management was placed across site to remind everyone to switch off lighting and machinery when

not in use so we can reduce our carbon footprint. Again, this is something that has become part of daily life without anyone being prompted. Following this, office staff were consolidated onto one floor instead of two to reduce our waste through unnecessary energy consumption.

This means we now only need to light and heat one floor. Each department has progressed its

own environmental improvements on their own accord.

Maintenance department:

- Switched all lighting to LED - £5480 saving per year. We also had sensor lights installed in offices as well as toilets which is a further energy saving.
- Machines shut down when not in use - £26,460 saving per year.
- Reduction in water usage by implementing a timed flushing system. This provides us with a yearly saving of £8104. - We now get oil tested, meaning it can be reused after passing test.

We used to dispose of it frequently – yearly saving of £13,750. As well as the above saving money for our site, the real efforts behind them were to reduce our carbon footprint.

The maintenance department also have several projects they aspire to work on such as waste-water

reclamation and a compactor to reduce the mass of waste leaving site.

Painting & welding:

- Recently changed paint supply from Spain to UK - £5000 annual saving, also reduces transportation wastes.
- Welding waste reduced by 85% changing from welding rods to coils.
- Residue paint waste tins were placed in large skip and transported at a cost of £600 per skip.

This was changed over to a Haz Safe which is now incorporated in a mixed waste pickup at £250 per load. Once again, all improvements mentioned above have a positive impact on the environment.

Purchasing:

- £18,000 saved from 2018-2020 through packaging changes. 53% reduction in materials used to pack our products.
- We have begun recycling our broken pallets and have so far been reimbursed £17,000.

Again, by carrying out the above we are lessening our impact on the environment. Another saving we have made is by introducing a segregated stainless-steel skip. Previously, stainless-steel was mixed with general steel resulting in a loss. By doing this, we were reimbursed £2,600 within 4 months.

Due to a change in handling methods for hazardous waste; instead of using 205 litre drums we now use large IBC tanks. As a disposal method, this saves us £125 per IBC tank & the last collection saved us £1000.

We have recently invested in a new fleet of forklift trucks. This investment will save us £50,000 per annum as well as environmental savings due to a reduction in diesel consumption and frequency of servicing.

All of the above points have resulted in energy and costs savings for the site and lead to a huge reduction in our carbon footprint. With the monetary savings, we aim to invest a lot of this into the continuation of our environmental enhancement project.

One area we have started to explore more is conservation. In May 2021, we introduced bird and bat boxes around our site as well as insect houses.

This is to give back to the environment and help improve the nature around our factory. We have constructed a 'Giving Tree' where employees are encouraged to donate nature items such as bird food or hedgehog houses.

These will be distributed in our grounds as well as sewing a wildflower meadow. Our conservation efforts have been posted on Yammer which is an enterprise social networking site and we have received excellent responses.

We are in the process of creating a presentation which shows our project from creation to where we are today which we will send to the Global Environmental Director's. We aim for this to be shared with other NOV sites worldwide so that they can begin to embark on a similar journey to ours.

We would love to see our work encouraging environmental benefits around the world & in other communities. We believe this is only the beginning of our environmental journey.

Future projects include;

charging points for electric cars,
further reducing wastes on site eg. halving the number of printers.

Finally, we are going to introduce 'Charity Days' whereby employees visit nominated environmental projects to offer their time to help.

This is great for our company but also for the communities we have around us here at NOV Gateshead.

NAVTEK NAVAL TECHNOLOGIES INC.

ZEETUG

AIM

ĞİSAŞ, the Pilotage & Tugboat Company located in Tuzla-ISTANBUL, was planning to replace four of its existing tugboats with smaller and environment-friendly tugboats, thus was also signaling a long-term commitment towards carbon emissions in and around the Tuzla shipyards' and ports' zone. The requested size of vessel with the hybrid solution was not possible to produce. Thus, ZEETUG is a green and high technology product. The all electric harbour tugboat is especially developed to operate in narrow and tight environments, same time being eco-friendly.

ACHIEVEMENTS

Navtek considered the demand and it was a challenge to fit the hybrid solution to a 10% smaller tugboat request. Therefore, we decided to investigate whether a zero-emission electric vessel is technically possible. The next step was to consider the feasibility of full-electrical operation from an engineer perspective...

Our research and development methods rely on two main approaches of analysis. One is the numerical tool developments based on unsteady CFD computations, both aerodynamics and hydrodynamics. The other one is the prototype and field experiments. Power requirement information for 21 different maneuver options are obtained from real tugs and the net power.

These experimental analysis results allowed the support and development of the numerical tools regarding tugboats operating range, operation time, distances to be sailed and basic power requirement during all maneuvers of a tugboat. We have spent a significant amount of time to develop this innovative

tugboat, then we came to the conclusion that ZEETUG (Zero Emission Electric Tugboat) was technically possible.



IN DETAIL

What Did the Project Involve Doing?

With today's increasing earth pollution, most technologies are being developed with greener solutions. The marine use of LNG and Hybrid solutions for a greener world are currently the most popular technologies. As a result of the current maneuvering applications, it is observed that less emission amount is achieved at low loads. By using LNG and Hybrid technologies, the oscillation at these low loads can be eliminated only to an amount of 50%.

With ZEETUG this amount is 0%.

Why Did You Do It?

ĞİSAŞ, the Pilotage & Tugboat Company located in Tuzla-ISTANBUL, was planning to replace four of its existing tugboats with smaller and environment-friendly tugboats, thus was also signaling a long-term commitment towards curbing emissions in and around the Tuzla shipyards' and ports' zone.

We considered the demand and it was a challenge to fit the hybrid solution to a 10% smaller tugboat (requested size due to the tight and narrow environment). Therefore, we decided to investigate whether a zero-emission electric vessel is technically possible.

The next step was to consider the feasibility of full-electrical operation from an engineer perspective...

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significant amount of time to develop this innovative tugboat, then we came to the conclusion that ZEETUG (Zero Emission Electric Tugboat) was technically possible.

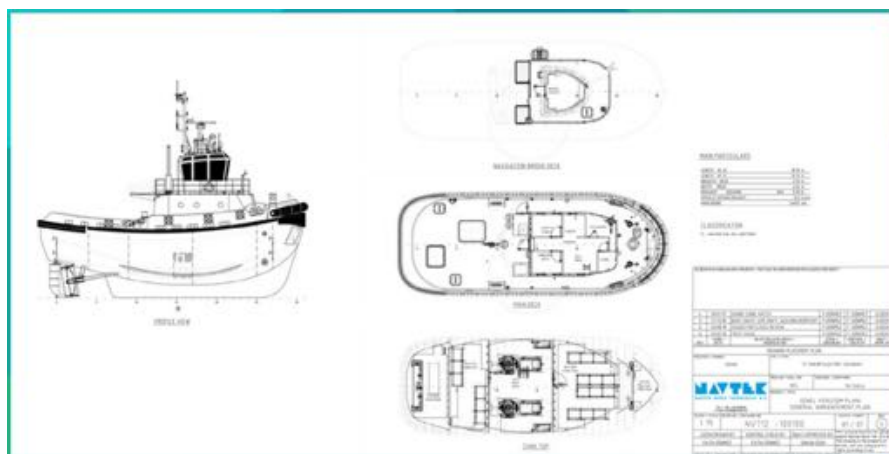
If Quantifiable, What Did the Project Achieve in Terms of Sustainable Development, Economy, Environment and/or Equity?

Using the resources we have in the most efficient way (without harming the environment) is the basis of the concept of sustainability for us.

- * ZEETUG30 is expected to reduce CO₂ emissions by 210 tons and NO_x emissions by 9 tons a year. This value in emission reduction is equivalent to saving about 580 trees according to carbon meter calculations.
- * Our commitment to reduce operation costs must be more than just words for a business that needs to make profit. The cost of operating an electric tugboat is 85% less than running a diesel tugboat.
- * ZEETUG also has a Smart Tug Energy Management System (STEMS), developed by NAVTEK. By analyzing the operation profile and the environment STEMS is a software that directs to feasibly working condition of the operator and optimizes the operator's charging infrastructure by efficiently monitoring, managing and adjusting the energy consumption.

Who and What Benefited?

This is a technology developed to reduce the present air pollution. Thus, any company/ country which choose this technology in maritime will get the benefit. Meantime due to the 85% less operation cost Owners/Operators will also save money, meantime not harming the environment.



This zero emission, all electric and re-chargeable technology can be adapted to watercrafts as Ferries, Workboats and similar short distance vessels.

ZEETUG vs Diesel driven tugboat

- More Powerful
- More Efficient
- 85% less operation costs
- Eco-friendly
- Safe
- Smart

Longer Term Benefits?

More green, More silent, cleaner and more efficient ports.

- Smart Tug Energy Management System is designed the objective of optimizing electric power consumption of the electric tug and extending its driving range.

What Did You Learn From the Project and are You Planning Any Further Development?

We have improved our experience in the green and high maritime technology. We grow with ideas where development is unlimited. We are working on to shorten the charging time also to improve the STEMS program.

Navtek is not only a naval design and engineering company, but a science firm with innovative R&D activities. Navtek's office is located at 'Teknopark Istanbul'.



Teknopark's; whose main purpose is to increase the wealth of the society by supporting the culture of innovation of knowledge-based companies. It manages and promotes the flow of information and technology among universities, R&D institutions, companies etc... Teknopark's, facilitate the formation and growth of innovative companies they host and provide high quality

Was There Anything Innovative About the Project?

With its all electric battery powered, quick charging station and smart management system, ZEETUG is the roof project of 3 different innovative products;

- An more efficient, all electric and re-chargeable harbor 'tugboat' technology is invented.
- Quick Charge Station, can charge a ZEETUG-30 battery in less than 1 hour.

spaces and value-added services to only selected companies and institutions with innovative R&D activities.

Navtek aim to improve more green solutions/projects in maritime, today we are also developing 'the green ports' project.

NI WATER

NI WATER INNOVATION PILOT PLANT SYSTEM

AIM

NI Water (NIW) is aiming to revolutionise the analysis of myriad water treatment processes and determine the most sustainable treatment options through the development of a pioneering pilot plant.

The Pilot Plant is an innovative mobile testing facility developed by Trevor Cousins, Water Efficiency and Innovation Manager at NIW, working in partnership with Lowry Building & Civil Engineering (LBCE), Clinty Chemicals and RPS.

Traditionally, water process analysis is carried out using jar testing. This approach doesn't take into account the constant changes in natural organic matter within the raw water and only provides a snapshot of the full treatment process at a given time.

The Pilot Plant offers a robust, all-inclusive testing platform, specially designed to replicate the water process at any NIW site. It works offline, without affecting the water treatment process, and allows the rigorous testing of myriad carbon-based products, resins and coagulants simultaneously - using the same raw water source - to reduce Trihalomethanes (THMs) and pesticides (MCPA). Through real-time data collection and analysis, NIW can measure how effective and sustainable each process is before considering it as a permanent solution.

The entire plant can be relocated anywhere with only set-up costs incurred at each site.

ACHIEVEMENTS

The Pilot Plant was established at Derg Water Treatment Works (WTW) in September 2020 to



investigate potential treatment processes to address MCPA and THM compliance issues.

Through real-time analysis, the Pilot Plant was instrumental in identifying the most effective solution at Derg to maintain Drinking Water Inspectorate (DWI) and NIW Asset Standard compliance. In addition, it informed the design of the multi-million-



pound capital works project at the WTW and allowed the design/contract team to hit the ground running.

The robust results achieved at Derg have demonstrated the economic, environmental and operational benefits of adopting this innovative Pilot Plant technology.

One of the key aims of the Pilot Plant is to provide a sustainable testing facility and its forward-thinking modular design means that it can be easily adapted for any NI Water site.

In early 2021 the Pilot Plant was moved to Ballinrees WTW and enhanced with the addition of automated testing. This has allowed NIW to carry out in-depth analysis of myriad treatment processes on a 24/7 basis to determine the most cost-effective, sustainable solutions.

The Pilot Plant recently scooped first place in the loW NI Innovation Awards 2020 and is now a finalist in the UK-wide loW Innovation Awards.

IN DETAIL

What Did the Project Involve Doing?

The NI Water (NIW) Pilot Plant encompasses a number of mobile units to replicate the entire water treatment process – using the exact raw water source – at any NIW site. The on-site system incorporates scientific facilities to allow the simultaneous testing of numerous processes as well as the collection and analysis of real-time data so that the most accurate results can be obtained.

The Pilot Plant was initially established by NIW, RPS, LBCE and Clinty Chemicals at Derg WTW in September 2020 to investigate potential process changes/product additions to address MCPA and THM compliance issues. Utilising the

team's extensive knowledge, an offline Pilot Plant was designed, constructed and commissioned within one month to collect real-time data with no interference to the existing WTW process.

The clever modular design allows NIW to examine water quality and compliance issues and research the best possible solutions in economic, environmental and engineering terms.

Why Did You Do It?

Selecting a permanent treatment process to achieve sustainable improvements in water quality, and marrying that with the most economical viable solution, is a priority for NIW and the Pilot Plant makes this possible.

Traditional process testing is carried out by jar tests using small amounts of water. This only gives a snapshot at any one time and doesn't take into account the constant changes in natural organic matter within the raw water. The Pilot Plant was



developed to optimise new products that can be used to reduce THMs and problematic pesticides (MCPA). This innovative approach requires 40% less chemical in the testing process, significantly reducing the amount of waste produced. It also allows NIW to identify the most sustainable products that can be incorporated into the overall treatment process to reduce chemical usage, reduce waste and in some cases promote chemical-free treatment.

At Derg the Pilot Plant incorporated the testing of five different processes running simultaneously off the one raw water source to determine the potential of innovation, sustainability and efficiency.

What Did It Cost and Where Did the Money Come From?

NIW partnered with Clinty Chemicals to bring innovative products and equipment to the Pilot Plant system. The total cost was circa £500,000 and came from NIW's innovation budget. NIW also teamed up with Barr and Wray to provide an element of the pilot plant (free of charge) which tested the effectiveness of chemical-free treatment.

If Quantifiable, What Did the Project Achieve in Terms of Sustainable Development, Economy, Environment and/or Equity? Who and What Benefited?

The Derg Pilot Plant has been fundamental in progressing the best overall solution for the capital

works upgrade at the WTW i.e. the accuracy of the data identified that the initial six clarifier design could be reduced to four, reducing budget and programme.

The Pilot Plant is equipped to identify the optimum chemical dosages required to achieve the required water quality output at each treatment works. This promotes a more sustainable approach and ensures that there is no wastage in the treatment process.

Working with colleagues in Water Supply and Capital Delivery, NIW is building on the extensive knowledge gained to ensure the most effective solutions can be identified ahead of capital works projects getting underway. By utilising accurate, real-time data,



NIW's end user (Operations) can be confident that the most effective and efficient treatment process is being applied; while the customer can be assured that they are getting a high-quality product with value for money to the public purse.

Dymphna Gallagher, Head of Drinking Water Regulation for NI Water, said: "The innovative approach taken at Derg has started something

really exciting for NI Water. We have the capability to test new treatment streams in situ and more importantly this work has shown that innovation can be the mechanism for overall social, economic and environmental benefits for our communities.”

Longer Term Benefits?

The use of this Pilot Plant at other NIW sites will provide even more important data that will help shape the design of sustainable treatment processes and associated construction methods in the future.

Was There Anything Innovative About the Project?

The Pilot Plant is unique in that it allows testing of innovative/new process and products at the front end of the treatment process using different carbon-based products. The design of the Pilot Plant can also examine different quantities and volume of tanks and can accurately test the real-time, live data from each particular site and scenario.

This data can then be effectively used to ensure the design/contract team deliver the most efficient permanent solution for specific treatment works.

The clever modular design means that it can be adapted for any site or process. At Derg WTW the process containers were spread across a large

site on ground level, whereas when relocated to Ballinrees, the containers were stacked and configured within a very confined space.

As a further innovation and to improve the research, the Pilot Plant is now smartly automated with probes taking readings at 5 second intervals. This has vastly reduced labour, with sampling no longer required manually every 20 minutes.

Can Other Organisations/Communities Benefit From Implementing Your Methods?

Other water companies could easily replicate this innovative idea and implement a simple Pilot Plant format to test potential solutions before committing to construction. NIW has been liaising with water companies across the UK to share experiences and lessons learnt from their Pilot Plant installations.

What Did You Learn From the Project and are You Planning Any Further Development?

The pilot plant system was first used at Derg WTW to determine treatment on the incoming water source consisting of problematic dual river sources. This site had a DWI enforcement notice for pesticide compliance and THM exceedances. The Pilot Plant tested five processes, across seasonal changes, with an outcome that informed the optimum solution for NIW. To build on this instrumental knowledge and feed into NIW's investment plan, two further pilot plants have been commissioned to establish the correct TOTEX solutions taking into account new innovation.



NOVATI WITH ROADCHEF

ROADCHEF - SUSTAINABILITY MATTERS

AIM

NI Water (NIW) is aiming to revolutionise the analysis of myriad water treatment processes and determine the most sustainable treatment options through the development of a pioneering pilot plant.

We're all feeling the impacts of climate change, bushfires in Australia, floods in the UK and droughts in South Africa. Novati & Roadchef share the mutual belief that "Sustainability Matters". Materials, water, energy and fertile land are the basis for our life on earth. Humanity's rapidly growing consumption of resources is causing severe damage. We are exhausting all natural resources so need to find alternative solutions. To continue to thrive, we need to become more sustainable.

The aims of our project were clear:

- Design & implement a plan to achieve zero landfill
- Increase recycling rates
- Shift focus to the "Reduce" & "Reuse" tiers of the waste hierarchy
- Implement the "Keep It, Bin It" campaign

Our project includes:

We serve over 11 million coffees and 1 million breakfasts every year. Our vision is to provide customers with a better motorway service experience. With circa 3,500 employees and 30 sites, we're committed to providing fresh bread, fresh pastries, fresh meals, fresh coffee and a fresh approach to waste and the environment.

ACHIEVEMENTS

Over the past two years we have achieved and exceeded all of our environmental - waste management – targets.

A fresh approach that has resulted in:

- Increased average payloads by circa 10%
- Increased recycling levels for all but one waste stream
- Installed reverse vending machines giving consumers the opportunity to earn money by recycling single-use plastic bottles
- Delivered a journey to zero landfill with no increase in budget
- Reducing coffee cup sales
- Recycling coffee cups & grounds



Roadchef are the first Motorway Service Area (MSA) operator to achieve zero landfill and our recycling schemes go significantly further than those of our competitors. All of this has been achieved within strict budget constraints.

Highways England and Defra brought together a coalition of partners including Roadchef. Working together, 3.3million 16-24yr olds have been reached via a targeted social media campaign relating to “Keep It, Bin It”. Messaging is also promoted to millions of visitors to our MSAs via digital out of home screens.

WE DEMONSTRATE THAT SUSTAINABILITY MATTERS.

IN DETAIL

Why Did We Undertake This Project?



52 million visitors are welcomed into our Motorway Service Areas (MSAs) every year. Whether they're lingering over a latte, or getting straight back on the road, many make a purchase in one of our outlets. Serving 11 million coffees and 1 million breakfasts inevitably results in waste being generated. In fact, it results in circa 5,600 tonnes of waste being produced in a year. With the weight of responsibility on our shoulders, we want to set the bar for best practice and ensure we minimise the impact we have on the environment.

Working in partnership with Novati, we created a strategic business plan that plotted goals and project timelines. Goals defined by our ambitions and Novati's knowledge of what we were truly capable of achieving. Goals were reviewed regularly to ensure we could maintain and continuously improve our performance levels.

What Were The Key Areas of Focus of This Project?

The “Sustainability Matters” programme focuses on technical changes as well as ways to change the working culture of MSAs. Novati spends approximately seven working days every month

engaging sites, focusing on improving our telemetric automated booking system for compactors.

At Roadchef's 2019 annual conference Novati ran an **ENGAGEMENT COMPETITION**. Staff answered questions relating to Roadchef's environmental credentials. Staff were also given the opportunity to recommend any improvements to environmental credentials. Novati will award Gold, Silver and Bronze status to the best performing sites at the 2021 conference (2020 postponed due to coronavirus).

BESPOKE INTERNAL SIGNAGE and a **WASTE JOURNEY BOARD** have been created so staff understand the importance of segregation at source.

VISITORS ENGAGE with “Sustainability Matters” using reverse vending machines to earn money by recycling single-use plastic bottles.

Visitors are offered a 25p **DISCOUNT FOR USING REUSABLE COFFEE CUPS**.



Roadchef's commitment to inverting the waste hierarchy



Visitors are also able to recycle any coffee cup via the Costa Coffee CUP RECYCLING SCHEME.

All 3,500 STAFF HAVE BEEN ISSUED WITH REUSABLE CUPS AND REFILL BOTTLES and retailers offer jugs of water for visitors to refill bottles.

Roadchef's WASTE STREAMS ARE COLLECTED BY 32 SERVICE PARTNERS across Britain. In order to implement change, the benefits had to be understood and supported by every supplier.

The Financial Implications?

With so many areas of focus, it's reasonable to assume that project delivery would require significant uplift in budget. The reality couldn't be more different.

Novati engaged with 32 service partners who collect our waste across the UK. By mapping and optimising disposal routes, they were able to ensure that all waste was diverted from landfill with no increase in our budget.

Reviewing compactor payloads & optimising the collection service combined with increasing our source segregation and recycling meant that in 2019

Roadchef came in circa £60K ahead of budget. This gives sites the opportunity to invest the savings in capex for more bins to continue improving segregation at source.

The costs for engaging staff at the annual conference as well as the design and production of bespoke posters and signage was born by Novati.

Coca Cola has provided the financial backing for two reverse vending machines which were installed in 2019. Novati matched this commitment for 2020 with

Harrogate Spring Water supporting the programme in 2021.

What Did We Achieve?

In January 2018 10.93% (45.19 tonnes) of waste was sent to landfill. This had reduced to 5.27% (27.56 tonnes) by December 2018. By December 2019, with the "Sustainability Matters" programme in full effect, LANDFILL HAD DECREASED TO JUST 0.33% (1.85 tonnes).

When comparing 2018 vs 2019 the environmental credentials are as follows:

- General Waste Recovery 4118 tonnes INCREASED to 4212 tonnes
- General Waste Landfill 439 tonnes DECREASED to 175 tonnes
- Coffee Grounds 226 tonnes INCREASED to 241 tonnes
- Cardboard 561 tonnes INCREASED to 569 tonnes
- Plastics 13.4 tonnes INCREASED to 14.1 tonnes

- Dry Mixed Recycling 90 tonnes INCREASED to 101 tonnes
- Glass Bottles 3.4 tonnes INCREASED to 3.7 tonnes
- Used Cooking Oil 52 tonnes INCREASED to 56 tonnes
- Food Waste 263 tonnes DECREASED to 242 tonnes

One figure that decreases is food waste. Roadchef have focused on stock management to reduce food waste arising in the first place. MSAs have KPIs in place which are monitored and discussed regularly. These KPIs incentivise MSAs to focus on stock management and minimise waste.

Please see the supporting document for further details on our environmental achievements.

Who Benefits From Our Success?

Our 52 million visitors, 3,500 employees and the 32 service partners that collect and process our waste all contribute to and benefit from the success of our project. Our commitment to the waste hierarchy and the need to invert the pyramid means that most importantly, the generations that follow us will benefit from living in a greener, cleaner environment.



Were We Innovative?

At first glance, maximising source segregation, increasing compactor payloads and diverting waste from landfill may not seem innovative. However, our partnership with Novati is unique because our approach delivers results that tower above other MSA operators.

WELCOME BREAK state that they “recycle paper, plastics and food”.

MOTO state they “will avoid landfill at all costs” and “separate cardboard and used cooking oil”.

ROADCHEF SEGREGATES EIGHT WASTE STREAMS and has implemented changes that have a positive long-term environmental impact.

We engage with the public about waste disposal. Coffee cup discounts, sales of coffee log and using reverse vending machines are all tools designed to make the consumer think about their actions and to act accordingly.

Who Else Can Benefit?

The issues we’ve addressed aren’t unique to Roadchef. Other MSA operators, railway stations, shopping centres and more can all benefit from implementing solutions similar to ours.

Future Plans Include:

- RE-ENGAGE underperforming sites
- Deliver AWARDS via ‘Heroes Of The Year’ programme at AGM
- Create a CLOSED LOOP SOLUTION FOR PLASTIC BOTTLES in RV machines
- Donate PROFITS from RV machines TO CHARITY
- INSTALL RV MACHINES at more MSAs in 2020/21
- INSTALL “HYDRATION STATIONS”

NOVATI WITH TUI

TUI – BETTER HOLIDAYS, BETTER WORLD

AIM

We cannot get through a single day without having an impact on the world around us. What we do makes a difference, we have to decide what kind of difference we want to make. As the proverb states, “we do not inherit the earth from our ancestors, we borrow it from our children”. Our Sustainability strategy “Better Holidays, Better World” addresses many challenges for TUI Group. However, this project is specific to TUI’s UK retail stores.

In 2019, TUI and Novati commenced a yearlong project to review container specifications across 439 UK stores. TUI Group, the world’s number one tourism business, employs circa 10,000 staff in the UK who deliver unique, modern holiday experiences for more than 6,000,000 customers every year. We have a responsibility to minimise the environmental impact of our retail operations. Novati offered fresh innovation and energy to help us make significant changes. Our goals were clearly defined:

- Increase recycling & source segregation
- Review supply chain to create a zero landfill solution
- Remove unnecessary collections
- Reduce waste budget

ACHIEVEMENTS

From the top down, buy-in was evident. Every Store Manager or a colleague engaged in the program, discussing current process, proposed solutions and buying-in to the steps they could take to achieve the sustainability goals being set.

The impact and success of this engagement is evident in the results:

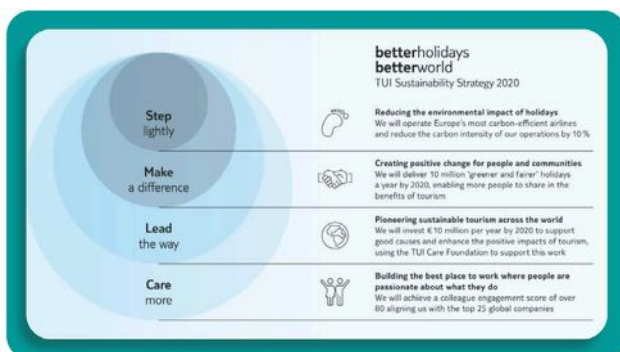
- Project delivered across all 24 regions (439 stores)
- Material Recycling rate 68%
 - Material Recovery rate 32.1%
 - Material Residual Landfill rate 0.2%
- Reduced waste generation by 267 tonnes (2019 vs 2018)
- Trade Waste budget reduction 26% (circa £60K p.a.)
- Novati MORE removed 6,188 unnecessary container collections p.a. from our estate

“Better Holidays, Better World” isn’t a policy strapline with no meaning. Minimising the impact our retail operations have on the environment has been a key focus area for our Retail Facilities team. Our performance rates in 2019 show that we are living our beliefs and we are creating a better world.

IN DETAIL

Why Did We Undertake This Project?

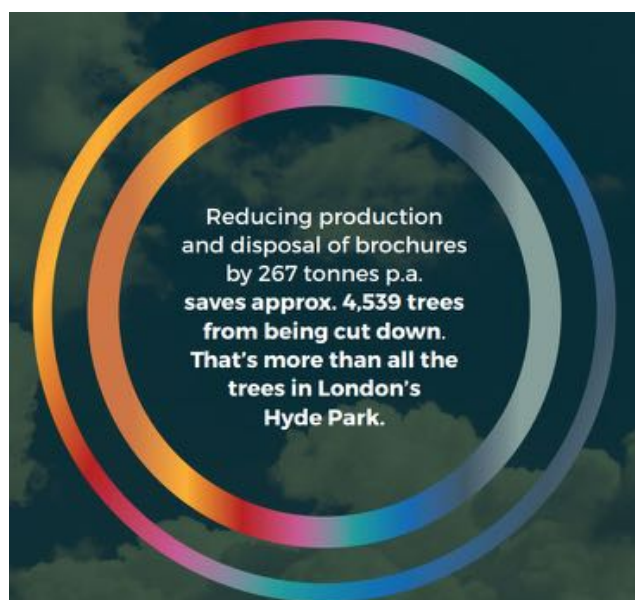
Like many high street businesses, we’ve faced significant challenges over the past few years. Our waste operations have run without any real issues for a number of years which meant it wasn’t given the same focus as other aspects of our retail facilities operation. In 2018 we began to ask ourselves the



important questions:

- How are we performing?
- Why do we do things the way we do?
- What can we change?
- When can we deliver change?
- Who can support us to deliver change?

With the support of Novati we committed to a yearlong project to review container specifications across 439 UK stores. TUI Group, the world's number one tourism business, employs circa 10,000 staff in the UK who deliver unique, modern holiday experiences for more than 6,000,000 customers every year. We have a responsibility to minimise the environmental impact of our retail operations and Novati offered fresh innovation, support and energy to help us make significant changes.



What Were the Key Areas of Focus of This Project?

Initially, reviewing existing performance rates served no real purpose. We could see how we were performing, but we didn't know what our maximum performance capabilities were. Without the understanding of maximum capability, how could

we know if current performance rates were good, bad or indifferent. To address this issue, Novati audited a handful of stores so that we could gain a greater understanding of our material composition and the volumes of waste actually generated. This information validated our belief that we could significantly improve our service specifications, with an emphasis on maximising recycling rates.

Armed with the right information, Novati delivered their MORE program across our estate. Reviewing the service specifications at every site they were able to create a solution that:

MINIMISES the cost per cubic metre by ensuring the most suitable containers are used

OPTIMISING container solutions to ensure all recyclable material is placed into the right containers

RATIONALISING services, ensuring half full bins are not being emptied

ENERGISING staff through an engagement program

The successful project delivery of Novati MORE means that we are able to reduce our waste budget and mitigate against future price increases generally associated with waste services.

The production of general waste is unavoidable. Therefore, we had to ensure we addressed this by looking for a solution to ensure we avoid landfill wherever possible. Novati invested time and resources mapping the disposal routes used by 85 service partners. Mapping end disposal destinations for general waste allowed us to identify and explore alternative treatment facilities. Alternative disposal routes and/or service partners were sourced to ensure nothing goes to waste via landfill.

In addition to these focus areas, we didn't want to ignore the upper tiers of the waste hierarchy. In 2019 our recycling rate (tonnage) decreased. This is because we've completed a project to Reduce the quantity of brochures we send stores. Ensuring the right quantities are delivered means we create less waste.

The Financial Implications?

The Novati & TUI relationship is unique because we take the partnership approach rather than the transactional approach. Both parties work collaboratively to implement changes that will have a long-term impact. Novati committed to delivering significant financial savings for TUI, offering a “Gain Share” financial model designed so that the more TUI saves, the more Novati earns. Further details about the mechanism of this model can be found within the supporting document. In essence, the bonus payment given to Novati for delivering savings was higher than the profits they would have earned if the projects had not gone ahead. We continued to retain the majority of the saving whilst also mitigating against future price increases.

Upon completion of the Novati MORE program our trade waste budget has reduced by £60K p.a. which is a reduction of circa 26%. By embedding a new set of behaviours in stores and establishing a new operating model our real savings over three years are closer to £200,000.

What Did We Achieve?

The economic benefits of this project are important. However, just as importantly, we have delivered change that has significant environmental benefit.

We have:

- Increased recycling to 68%
- Diverted 99.8% of all waste generated from landfill
- Removed 6,188 bin collections and the associated vehicle movements from our annual collection schedule
- Reduced the quantity of brochures sent to stores by 267 tonnes

Who Benefits From Our Success?

The 10,000 employees that generate waste and the 85 service partners that collect and process our waste all contribute to and benefit from the success of our project. By engaging staff and raising awareness about the impact we can have on the environment, we believe that some of our staff will carry that same mentality into their homes which means the effects of change ripple further through our society.

Were We Innovative?

Conventional self-delivery providers aren’t designed to offer solutions tailored to customers actual needs. This is because doing so would have the effect of reducing their revenue. Their trucks will be operating in the area regardless. Therefore, they are motivated by the need to drive revenue to consistently contribute towards truck profitability. Whether or not the customer has the best service solution isn’t going to concern them greatly. Because the outsource delivery model is based on not owning bins, trucks or disposal facilities, Novati has the flexibility to source the right solution. We believe that the innovation and creativity delivered by this project is easily seen in the results.

Ultimately, we have begun a process to invert the waste hierarchy.

Future Plans Include:

- Re-engage underperforming sites
- Halving vehicle movements for confidential paper and brochure collections
- Reducing general waste capacity across all sites to approx. 180ltrs a week (equivalent to a domestic wheelie bin)



PARC TROSTRE RETAIL PARK ENCOURAGING WILDLIFE THROUGH NATURE

AIM

Parc Trostre is a busy outdoor retail park in Llanelli, South Wales. We are situated in 22 acres with 35 retail units and a large car park providing 2009 spaces. Parc Trostre has an eclectic mix of retailers which attracts 5 million customers per annum.

The retail park is located near the South Wales coastline which has many nature trails, country parks and coastal pathways all in proximity. Parc Trostre has some large landscaped areas that have been developed around the park - this year-round planting provides a habitat for nature as well as tranquil distraction for our customers and local communities.



The aim of our 2022 initiative is to further develop / enhance our contribution to nature and bring more wildlife to the park, such as birds, bees, bats, hedgehogs & other insects to engage with our local community / customers in becoming more proactive in how they can support the natural environment.

Our role is not only in what we can do and achieve to protect and promote wildlife, but also in showing others what they can enjoy & contribute locally as well.

2021 we won a Green Apple for our project, 2022 we continue to develop this, creating further wildlife habitat/food areas for year round use as well as using recycled products.

IN DETAIL

We are an open air park surrounded by landscaped gardens / natural wooded areas set within our boundary.

As part of our continual growth & development we have introduced new wildflower areas which we hope will attract an increasing number of birds, butterflies / bees to the area. We have natural / manmade bird boxes, bug & bee hotels, recently installing bat and hedgehog housing into our wooded areas. We offer the added benefit of various food sources around the park for insects, in terms of strategic planting.

Birds currently nesting on the park include Woodpeckers, Blue Tits, Wagtails, Finches and Seagulls.

We hope to encourage more species with the variety of flowers that we have planted which will give year-round habitats / food sources.

We are situated within 22 acres, with approximately 6 acres around the site being landscaped, wooded, natural and planted areas. Our site team maintain these areas, cultivating planted stock, tending to native floral and ground covering plants as well as grass cutting.

We are now using used coffee grounds as fertiliser donated free by one of our tenants.

We have built a composed bin out of reclaimed wood that was sourced from tree felling around the park.

A 3rd party provider has donated £1000 worth of trees/shrubs to aid our efforts.

We have a variety of wildflowers and plants at the retail park, including bee loving plants such as Butterfly Bush, California lilac, Cotoneaster and Red Claws, as well as a selection of lavenders, flowering shrubs, heathers, and native trees.

As part of engagement with our local community & customers, we launched our 2nd Nature photographic competition via our social media, with prizes donated by our tenants. Our intention is to highlight some of the beautiful local scenery & wildlife and to encourage support & care for what we have on our doorstep.

We have added links to local nature walks & parks to our social media platforms to encourage customers and the wider local community to go outside and explore nature to see what they can find. To help encourage this we have posted scavenger hunts & blogs.

The team at Parc Trostre are committed to this cause and continue to look for new ideas that will continue our growth and development in this area. The dialogue we have instigated with our shoppers and local stakeholders is testament to the whole team's passion in the area. We all want to celebrate and protect what we have on our doorstep, whilst still running a busy commercial shopping park.



We have continued to develop our Environmental green programme, last year installing additional cycle shelters, working with the local council/community to help the further development of cycle tracks in Llanelli. Thus, helping to reduce the carbon footprint for fossil fuels as car users are encouraged to use greener forms of transport.

This year we have installed an electrical charging point for customers with electric powered vehicles. This will assist in reducing carbon emissions that contribute to climate change at a local and macro level. Improving public health and supporting the reduction in ecological damage as well as directly contributing to the protection of the local natural environment.

Future initiative's

We continue to develop / grow our wildflower areas, proactively encouraging and increasing wildlife.

We are also currently identifying ways to introduce a rainwater capturing system, this will allow us to use rainwater to irrigate our landscaped/wooded areas. This is both sustainable, as it reduces the impact on natural resources, is more nutrient loaded and also provides a financial saving to the service charge for our occupiers.

Conclusion

Our ongoing objective is finding new ways to be greener and more environmentally focused, to engage with our customers / local communities in joining us on this journey, as together we can have a positive impact on our shared local environment. Tenants / service providers have joined us in our efforts.

We are proud of what we have continued to achieve over the last year and are excited by our future plans for the park.

By working together we can facilitate change and we are determined to encourage others to join us on our journey.

PGT-RECLAIMED

PGT-RECLAIMED THE ENVIRONMENT WARRIOR

AIM

2020 has presented a number of challenges for businesses globally, largely due to the onset of COVID-19. How businesses have conducted themselves during this challenging time, while paying great attention to ethics and sustainability, should be held to an even higher regard. During this time PGT-Reclaimed, a lifestyle furniture manufacturer that uses 100 percent reclaimed wood, considered how it could support its greatest asset, its people, while working hard to ensure the company could survive the pandemic and come out the other side stronger. During the downtime, PGT-Reclaimed decided to recognise its efforts throughout history, which manifested in a book called *The Environmental Warrior*. This book, soon to be released, showcases PGT-Reclaimed's history, including how its founder, Ian Burden began the company, why he chose to use reclaimed wood in furniture, and why sustainability will continue to be a focus into the future. This book celebrates PGT-Reclaimed's 22-year history and how one man can make a difference. It is hoped the book will also provide hope for a better world.

- PGT-Reclaimed was a finalist in two categories in the Australian Supply Chain and Logistics Awards; for Environmental Excellence, and for Training for the company's transition from Nitrocellulose finishes to water-based materials.
- PGT-Reclaimed now has 95% of furniture transitioned to using water-based materials in its finishes, an action closely aligned with the company's environmental principles.

Despite closing down for a month as directed by the Vietnamese Government in April 2020, PGT-Reclaimed experienced high sales in May and June 2020, showing its environmental products are desired and continue to make change in the world.

IN DETAIL

PGT-Reclaimed, founded by Australian Ian Burden, is the inventor and manufacturer of lifestyle furniture made from 100% reclaimed wood, certified by the Forest Stewardship Council.

ACHIEVEMENTS

Over the past 12 months, PGT-Reclaimed has celebrated the following milestones and achievements;

- At last count, from using reclaimed wood, the company has saved more than 600,000 trees from being cut down.
- The company won the Gold Award for Sustainability at the 2019 Green World Awards.



Over the past 22 years, the company has faced many challenges, from being a disrupter in the industry for daring to use 100% reclaimed wood, to slowing down production to convert from chemical based finishing to water-based finishing.

One challenge the company couldn't have predicted, and we imagine it's similar for many global companies, was COVID-19.

How is PGT-Reclaimed Eco-Friendly?

PGT-Reclaimed's business model has been built on preserving the environment using recycled timber as the core material.

The idea came to Ian when the Vietnamese Government and World Heritage Council clamped down on logging in 1997. Ian saw potential to produce high quality furniture using reclaimed wood and worked with the Forest Stewardship Council to develop a Chain of Custody to prove the sourcing of the wood was ethical and authentic.

Conservation remains top of mind at PGT-Reclaimed demonstrated through recycled wood used throughout the company's Vietnam factory. It is taught to workers, including the benefits of preserving trees, such as how trees are more useful alive than cut down, as a living pine produces 2,700kg of oxygen for two people to use in a year. Staff are also encouraged to join founder, Ian and his wife and R&D Director Yung in cleaning up local

parks for the public to enjoy a cleaner environment.

The Importance of Sustainability

There are many theories about why COVID-19 occurred, but what we at PGT-Reclaimed consider is what the pandemic has helped us learn.

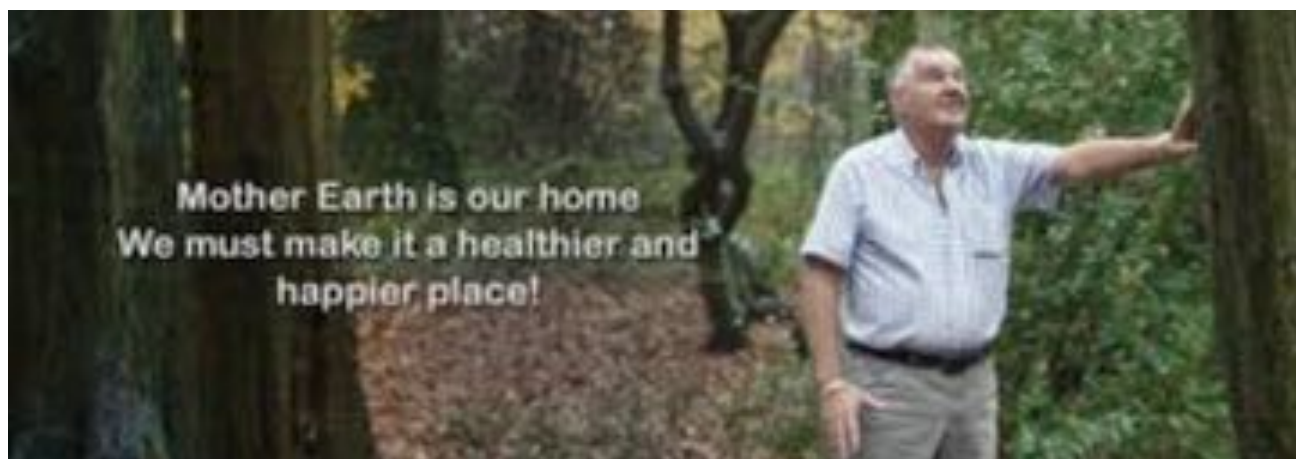
Some environmental scientists have made the link between the depletion of forests and the spread of viruses, like COVID-19.

A professor of epidemiology and ecosystem health at the University of California, Christine Johnson says:

"Protection of natural habitats for wildlife and restriction of the live animal wildlife trade are going to be essential for mitigating disease emergence, which is the establishment of new viruses from animals into susceptible human populations, and, if viruses are human-to-human transmissible, can cause pandemics."

Not cutting down trees is one way we are helping to protect these ecosystems, by allowing trees to do what they do best, to capture carbon, along with ensuring they are a natural divide between wild animals and humans.

Coincidentally, the 50th Earth Day was acknowledged on 22 April, in the midst of the pandemic. To mark the occasion, PGT-Reclaimed released a video



voiced by our founder, Ian Burden, to talk about the issues facing our planet and to remind the community that the pandemic is temporary, but the impact we make to our planet each day is permanent.

As PGT-Reclaimed's founder has always testified, "Why cut one down when you can use what's lying on the ground". Over the past 22 years, Ian has proven the answer in the work the company has done in producing sustainable furniture for the world's benefit and saving over 600,000 trees from being cut down which is equal to 18 million new trees if we multiply it by 30 times for the number of years it takes for a pine tree to mature to be harvested. A small, but useful contribution to the fight against global warming, and even the next pandemic.

Prioritising Staff During Covid-19

One of our actions to continue protecting our environment is by protecting our employees who have devoted their lives to producing our beautiful, sustainable products in our factory in South Vietnam.

In early April when the virus reached Vietnam we couldn't predict how the pandemic would affect our factory and business. But our first priority was supporting the welfare of our staff as we weren't sure if they would be out of work for three months or longer.

We forecasted the government's lock-down was coming, so we ordered bulk rice and instant noodles to give to our entire workforce of nearly 600 people. Our workers were incredibly touched that we considered their family's wellbeing in this time of uncertainty, with some sharing their gratitude on social media.

The Environmental Warrior

During the factory's shutdown, we were conscious of how we could maximise this time, doing good for the community, while reaffirming our commitment to environmental sustainability.

A main focus was writing a book (around 200 pages) to document PGT-Reclaimed's history, philosophy, carpentry techniques, processes and the people behind the brand.

Topics included:

- Our founder, Ian Burden's history
- Where the discarded wood is from
- Why we decided to use 100% natural wood
- Why PGT-Reclaimed uses hands rather than robots to make the furniture
- The research that goes into selecting the right type of wood
- The drying process
- Why we used water-based finishing materials

This book is an important legacy to show how PGT-Reclaimed has built a company on sustainable processes and sustainable materials that we hope inspires others in their choices when it comes to companies manufacturing products, or consumers choosing products for their homes.

Being Environmental is Profitable

Although we experienced a lockdown in April, we were surprised and relieved to experience high sales in May and June giving us confidence that some parts of the world are beginning to see a way out of the COVID-19 pandemic.

As Australia has always been a small market for us, gaining interest from one of the major retailers in this country was a great achievement. Snooze, which has 91 stores across the nation decided to begin selling our products. This shows how more Australians are taking interest in sustainable products.

Other successes included our 22-year-old Cornwall collection being picked up by Kirklands, an American retail group with more than 600 stores, showing the evergreen nature of our furniture.

We hope by sharing this news companies can be inspired to have a greater environmental focus and how it may take some time, but they will eventually be able to reap the rewards, not just by knowing they are making a difference to the environment.

The Finer Details

Just how sustainable is PGT-Reclaimed? Our methods continue to evolve, but here is the latest tally of our efforts:

- We export around 3,300 tonnes of furniture each month to around 20 countries (meaning we are influencing environmental change throughout the world), this includes to retailers such as UK's Barker and Stonehouse, Sweden's MIO, USA's West Elm, Kirklands, Pottery Barn, La-Z-Boy, New Zealand's Salamander Enterprises and Australia's Forty Winks and Snooze.
- We have transitioned 95% of our furniture to using finishes made from 100% water-based materials, a better choice than Nitrocellulose to help the comfort of our workers, while providing peace of mind for our consumers.
- At last count we have saved more than 600,000 trees from being cut down.
- In 2019, PGT-Reclaimed won the Gold Award for Sustainability at the Green World Awards presented by the Green Organisation.
- We were a finalist in two categories in the Australian Supply Chain and Logistics Awards for Training and Environmental Excellence.

Looking to the Future

PGT-Reclaimed must continue to evolve to ensure we operate sustainably in every step our company takes.

Our company continues to grow which we celebrated recently by renovating our showroom and office over two levels. As well as it providing a new look for the company, the main reason was for staff comfort; maximising the use of natural light to provide a more friendly working environment.

Our current goals for the next 12 months include building a new factory to generate more jobs for locals, while generating more products to offer more eco-friendly choices, so that people can stay away from the unsustainable products that are available in the market currently.

We are proud of our 22 year journey to become an Environmental Warrior, and hope we can continue doing our part to protect our earth because we only have one earth to live in!

PREMIER CABS (BLACKPOOL)

PREMIER IS GOING GREEN!

AIM

To move our entire fleet of around 160 taxis and private hire vehicles over to hybrid or fully electric vehicles. Removing all pure petrol and diesel vehicles from the fleet, meaning that there would be a significant reduction in emissions from the millions of miles driven each year.

Also to give our drivers a more pleasurable working environment and our customers a smoother ride, increasing customer satisfaction, gaining new customers and drivers and retaining current ones.



ACHIEVEMENTS

In September 2018, we removed ALL pure petrol and diesel vehicles from our fleet, replacing them all with either the Toyota Auris, Nissan Leaf or Nissan env-200. We installed our own private network of rapid chargers around the town for our drivers, meaning they did not have to rely on the very minimal public charging infrastructure. Over time, we have replaced and upgraded vehicles as and when they become tired, giving them new lives as family cars and some even being used as electric campers.

Most of the vehicles have covered 100,000 to 400,000 miles before they are replaced. To date, our drivers have covered over 15,000,000 pure electric miles, estimating that we have saved over 4,000 tonnes of CO₂ if we were still running the Diesel Mondeos.

IN DETAIL

Back in 2014 after hearing about how efficient electric cars were becoming and after months of research, we made a pledge to become an all electric taxi company. In February 2015 the first 12 Nissan Leafs arrived and it was the start of an incredible electric journey. A few months later after proving that the electric vehicles were viable as private hire vehicles, we placed another order to replace some more of our diesel cars and began testing the Nissan env-200 combis viability as a private hire vehicle too.

Soon after this, we also placed an order so that we could begin replacing the Ford Tourneo Customs so that we were able to transport up to 6 passengers, as well as the 4 passenger Nissan Leafs. In March 2018, after slowly replacing our fleet bit by bit, we announced that from the September we would be removing ALL remaining pure petrol or diesel vehicles from our fleet.

It was the Managing Directors vision to make the town cleaner, reduce carbon emissions and give both the drivers and passengers a much nicer place to be whilst travelling around our town, Blackpool, as well as making long term financial savings for the company with less running costs for the vehicles. Now, in 2021, we have a private charging network of 14 rapid chargers across 5 locations around Blackpool, all privately funded by our company at a cost averaging around £25,000 per charger.

The vehicles bought to replace the petrol and diesels were either purchased outright, or bought via PCP then the balloon payment paid at the end of the agreement, or quite often settled early, whichever route gave the company the best deal.

All of the funds were saved by the company over previous years with no loans or mortgages required to purchase the equipment or vehicles, apart from the vehicles purchased via PCP. To date, our drivers have covered over 15,000,000 pure electric miles, estimating that we have saved over 4,000 tonnes of CO2 than if we were still running the Diesel Mondeos.

We consider this to have made a huge impact on the air quality in our town, benefitting our drivers, customers and the general public alike. Long term, our project is highly beneficial for our drivers, the customers, the general public and our company.

Clean air, a comfortable working environment and lower running costs which are then passed on to both our drivers and customers as financial savings. Financial savings made by the company include but are not limited to, fewer services required for electric vehicles, less wear and tear on the tyres and brakes and SUBSTANTIALLY less “fuel costs”, slashing the traditional diesel costs of around 16p per mile, to around just 3p per mile.

When we started out on our electric taxi project, there were only a small handful of electric taxis in the country, I believe the largest number of electric taxis on a fleet was just 4, so when we bought 12 Nissan Leafs, this was a huge leap for the taxi industry,

especially with the high mileage we were likely to be driving in them.

Over the past 6 years, we have proved that these vehicles excel as private hires and we have always been open with others within the industry with how we have achieved what we have. The managers and drivers are so passionate about these vehicles and the good that they do our town, that we are always willing to help others as we believe it truly is a fantastic direction for the taxi industry to be heading in, and we have proved that it works!

In 2019 we were awarded ‘Private Hire/Taxi Company of The Year’ by Greenfleet Awards, pipping 2 huge London companies, Addison Lee and Green Tomato Cars, to the post for our commitment to using electric vehicles as private hires.

Over the years we have learned so much more about the electric vehicles and charging infrastructure than we thought possible. We always try to be at the forefront of technology so we are constantly researching new vehicles coming to market, electricity companies and what type of energy they provide and new types of vehicle chargers and other technologies around the world.

Any that we have found to be viable we have implemented as soon as feasibly possible. The dispatch system we use for customer bookings has also been enhanced to offer ‘Closest Cab Technology’ meaning that there are fewer miles driven, further saving our electricity consumption.

We are looking to further our green credentials by eventually removing all hybrid vehicles from our fleet and have the entire fleet as 100% electric vehicles. To date we have around 40 Nissan Leafs, 60 Nissan env-200 combis, 50 Toyota Auris Hybrids, 5 Toyota Corolla Hybrids and 5 of the MG5 EVs.



PREZZO with NOVATI

A RECIPE FOR SUCCESS

AIM

Consumer confidence levels, disposable income and leisure activity are affected by changes in the general economic environment. This has always been the case, but during the peak of the pandemic, we've experienced and overcome some real challenges together.

Our Values are the special ingredients which make Prezzo unique. Two of these values have been the key to our success.

ONE TEAM – In our restaurants or offices, it doesn't matter. We're not about ego's, we're one team, all working together towards the same goals.

COMMUNITY – We all have an important role to play. We'll think about the impact each of us makes – we'll reduce our waste and limit our environmental footprint.

ULTIMATELY WE'RE PROUD TO SAY WE ARE PREZZO.

Our 2017 annual report stated "The group has continued to work to increase the proportion of our waste which is appropriately segregated and recycled."

For the past 3 years, we've been on a journey to:

- Move to a zero landfill solution
- Improve source segregation & recycling

With circa 12,000 bins & bags being collected every month

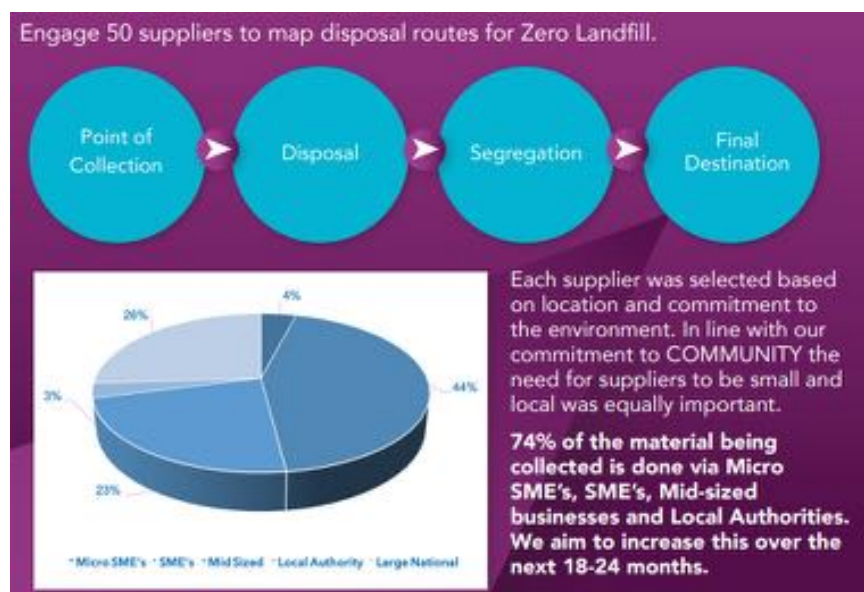
across more than 100 restaurants, achieving these aims was always going to be really challenging.

ACHIEVEMENTS

In 2019 we felt our sustainability strategy had plateaued. We'd improved recycling rates to 63% with most non-recyclable material being sent for recovery. But we knew we could do better, we knew we could recycle more and divert more of our valuable resources away from landfill.

So, in late 2019 we took the decision to partner with Novati to help us push forward and achieve the goals we'd set ourselves. Within a very short space of time the world as we all know it changed as we were all hit by the reality of the coronavirus pandemic. However, our value remains unwavering as does our environmental ambition; this belief has been validated as we now Recycle and Recover more material than ever before.

- We've landfilled just 7.3 tonnes of waste. (0.2% of 3,600 tonnes generated in the last year)



- Recycling has increased to 70.24%

Working with Novati, we redefined our budget for resource management. Lockdowns, regional tiered requirements, 'eat out to help out' and other factors mean that we've saved money as our budget didn't include a forecast for what was to come. However, we know that as we return to normality, we'll spend less than we did in 2018/19.

IN DETAIL

WHAT DID WE DO?

In 2019 we felt our sustainability strategy had plateaued. We'd improved recycling rates to 63% with most non-recyclable material being sent for recovery. But we knew we could do better, we knew we could recycle more and divert more of our valuable resources away from landfill. In late 2019 we took the decision to partner with Novati to help us push forward and achieve the goals we'd set ourselves. We're working with them because they're the leaders in creating truly sustainable solutions for the Hospitality sector.

Every restaurant was audited using Novati's MORE program to gain a greater understanding of current practices. Revised service specifications were created to dovetail with trading patterns.

- Minimise – the cost per meter, ensuring the most suitable containers are used.
- Optimise – containers ensuring all recyclates are segregated correctly.
- Rationalise – services ensuring half full bins aren't emptied
- Energise – staff through engagement programmes

WHAT DID WE ACHIEVE?

Our approach to resource management helps to create a sustainable transition to an inverted hierarchy and this means we must first move through a diamond hierarchy.



We successfully diverted 99.8% of all materials from landfill.

New services were mobilised that equate to circa 12,000 (forecast for post pandemic) bins & bags being collected each month and Novati selected 50 suppliers to deliver services across the UK; each was selected based on location and commitment to the environment. In line with our commitment to COMMUNITY the need for suppliers to be small and local was equally important.

74% of the material being collected is done via Micro SME's, SME's, Mid-sized businesses and Local Authorities. We aim to increase this over the next 18-24 months.

Other projects focused on:

Coronavirus

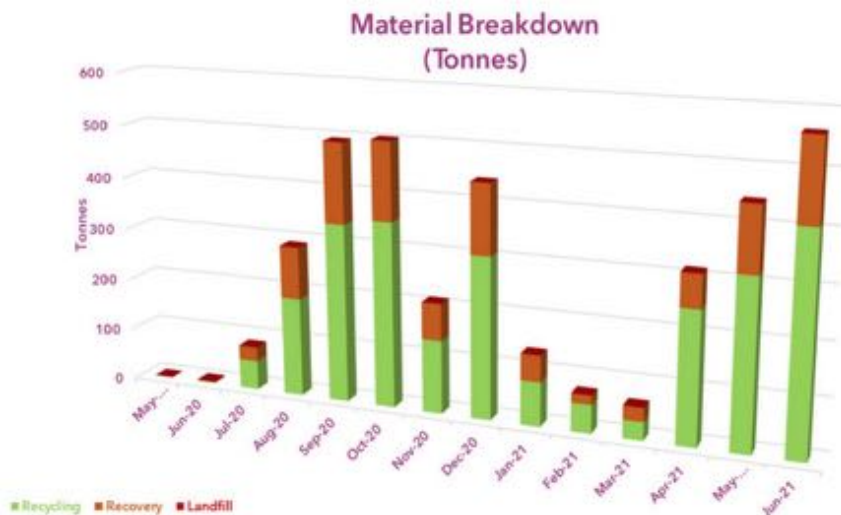
- Actioned 1,704 suspension & reinstatement orders and completed 1000+ service amendments to reflect government tier system

Seasonal fluctuations

- Managed an additional 155 tonnes of material ensuring 79% was sent for recycling

Eat Out To Help Out

- Adjusted specifications for most sites to reflect a major increase in sales



Food Wastage

- Analysed data and engaged sites appearing to generate too much or too little an amount of food waste.

Why We Did It?

The sector's facing significant challenges across every aspect of business. Consumers are faced with more choices than ever before and the need to be lean, clean and green is becoming ever more important. Consumers are asking about the origins of products, the carbon impact of farming operations and the environmental credentials of the brands they buy from.

Our environmental credentials in 2018/19 were approximately 63% recycling and 97% recovery. These statistics are better than many others in the sector but we knew we could do better, we knew we could recycle more and divert more of our valuable resources away from landfill.

STRATEGIC PLANNING & ENGAGEMENT

One of the biggest challenges of running an effective resource management strategy is getting the

workforce onboard. It's vitally important everyone is on the same page and carrying out materials handling procedures correctly. We needed to raise awareness and educate staff on the challenges and the solutions because this is fundamental to driving long-term cultural change.

We've engaged face-to-face with every site, shared our experiences and best practice to show both the economic and environmental benefits of maximised source segregation. This was followed

up with colourful engagement posters to help deliver the sustainability messages. League tables are also distributed to generate a sense of friendly rivalry. We call it our "road to gold".

What Did the Project Cost?

No additional cost was incurred because of this project. In fact, quite the opposite is true. The sustainable solutions we've implemented mean we are spending less on services than we have for many years.

What Did We Achieve?

In May 2020 we achieved our first goal; zero landfill. From that date onwards, we have ensured that more than 99% (generally agreed definition of zero landfill) of our materials are Recovered or Recycled.

Our Recycling rate has increased from 63% and now averages 70%. In April 2021 we achieved a phenomenal 80% recycling.

We're now monitoring sites who recycle less than 75%; our new goal.

For further details on our Economic and Environmental achievements, please refer to the supporting document.



Replicating Best Practice?

The approach we've taken with Novati to resource management may not appear innovative at a glance. However, when you compare our Sustainability credentials to our competitors, you can see the real difference in attitude and approach.

But we don't want the recipe that blends the right ingredients to be a secret. Working with Novati, we will be releasing a case study which demonstrates our approach to sustainability. We're also considering engaging with the Zero Carbon Forum who provide a collaborative environment where some of the best brands in hospitality convene to benefit from shared best practice, insights and thought leadership that drive progress toward sustainable business goals.

Furthermore, should we be successful with the Green Apple Awards we hope to be published in the Green Book so that others will learn from our winning experience and follow our lead to benefit themselves and the environment for generations to come.

What We're Going to Do Next?

There are many projects that we will deliver but there are 4 that create the most benefit:

Re-assess Estate

- Sites with a recycling rate below 75%
- Sites spending significantly above budget

Engagement

- Promote & stimulate friendly rivalry via league tables
- Promote the Road To Gold through an internal awards scheme
- Deliver engagement videos via 'The Grill'

Sales versus waste spend

- Use EPOS data to establish categories based on average sales
- Set a % target for waste spend versus turnover
- Target sites sitting outside %

Carbon Reduction

- Launch on-line carbon reporting tool using GHG conversion factors for 'waste disposal'
- Review accredited carbon offset schemes supporting the journey to net-zero.

QE FACILITIES

ENERGY & CARBON REDUCTION COMMITMENT

AIM

The aim of the project was to reduce the carbon emissions for Gateshead Health NHS Foundation Trust whilst improving resilience across the site including reducing reliance on the national grid. There were different elements to the project including installing two bio diesel CHP's, installing LED lighting and improving heating systems to ensure we aid the Trusts overall carbon reduction targets.

This project is one of many different elements incorporated in the Trust's Sustainable Development Management Plan that sets out areas of focus and projects in different areas to meet the 34% carbon reduction target including energy, models of care, use of resources, travel and green space.

ACHIEVEMENTS


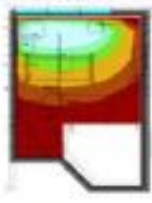


The Group has invested and installed two bio-diesel CHP boilers which are certified for the Renewable Obligations Certificate scheme (ROCs). GHNT was among the first Trusts to be certified to claim

Renewable Obligation Certificates (ROC's) for the generation of heating and electricity at zero carbon, via the use of certified rape-seed oil based bio-diesel.

Energy and Carbon reduction commitment: Since the 'benchmark year' of 2007, QEF has used SALIX match funding to carry out 59 separate schemes, with an investment of around £1 m, generating a recurring CO2 reduction of 1,680 tonnes / year, and a recurring annual financial saving of around £287,000 and ROC's income of circa £300k.

Examples of work undertaken include fitting smart LED lighting to all external car parks; LED lighting and smart switches replacement throughout the hospital; installing ventilation heat recovery systems; extension of building management systems and 'zoning' of heating systems to allow better time and temperature control, and steam de-centralisation. These works, and 'a multitude of smaller schemes', will see QEF achieve the 2020 Carbon reduction target of 34% by the end of this financial year.

IN DETAIL

| WINDOW AREA OPTIONS | HEAT GAIN SUMMARY (Based on Maximum Room Temperature 21°C) | | | | | HEAT LOSSES | DAYLIGHT IMPACT |
|---|---|----------------------------------|--------------------|---|--|--|---|
| | Glass Type Newcastle Spec | Glass Area m ² x m | Heat Gain Watts | Natural Vent air changes @ 25°C Outside air temp for Cottswold | Heat Gain Comments | Heat Loss Comments | |
| 3 GLASS PANELS  | Glass Type 29 Quattrotherm HP65 Neutral Toughened Green Intern Angoni Green Toughened No internal Blind | 3 x 1.7 | 702 | 8 | Heat Gain can be overcome with 0.040m ³ /s Makeup Air at 18°C introduced into Bedroom | Heat loss of 817kW can be overcome with 0.057m ³ /s of Supply Air utilised for Heating as well as Cooling | Average Daylight Factor: 4.8  |
| | Glass Type 30 Quattrotherm HP65 Neutral Toughened Green Intern Angoni Green Toughened With High Performance Internal Blind | 3 x 1.7 | 546 | 6 | Heat Gain can be overcome with 0.030m ³ /s Makeup Air at 18°C introduced into Bedroom | | |
| | Glass Type 30 Quattrotherm HP65 Neutral Toughened Green Intern Angoni Green Toughened With Fabric Blind (Curtains) | 3 x 1.7 | 660 | 7 | Heat Gain can be overcome with 0.036m ³ /s Makeup Air at 18°C introduced into Bedroom | | |
| 2 GLASS PANELS  | Glass Type 29 Quattrotherm HP65 Neutral Toughened Green Intern Angoni Green Toughened No internal Blind | 2 x 1.7 | 500 | 5 | Heat Gain can be overcome with 0.027m ³ /s Makeup Air at 18°C introduced into Bedroom | Heat loss of 750kW can be overcome with 0.046m ³ /s of Supply Air utilised for Heating as well as Cooling | Average Daylight Factor: 3.1  |
| | Glass Type 30 Quattrotherm HP65 Neutral Toughened Green Intern Angoni Green Toughened With High Performance Internal Blind | 2 x 1.7 | 396 | 4 | Heat Gain can be overcome with 0.020m ³ /s Makeup Air at 18°C introduced into Bedroom | | |
| | Glass Type 30 Quattrotherm HP65 Neutral Toughened Green Intern Angoni Green Toughened With Fabric Blind (Curtains) | 2 x 1.7 | 465 | 4.5 | Heat Gain can be overcome with 0.024m ³ /s Makeup Air at 18°C introduced into Bedroom | | |

The key element of the project involved the installation of two bio diesel Combine Heat and Power stations that could power and heat part of the Queen Elizabeth Hospital site, using a local produced bio diesel.

They were implemented as part of two different building developments on site, one for the new Emergency Care Centre, which is home to A&E, Walk in Centre, paediatrics, two inpatient wards as well as shops, a pharmacy and admin areas. The other was installed as part of the refurbishment of the old

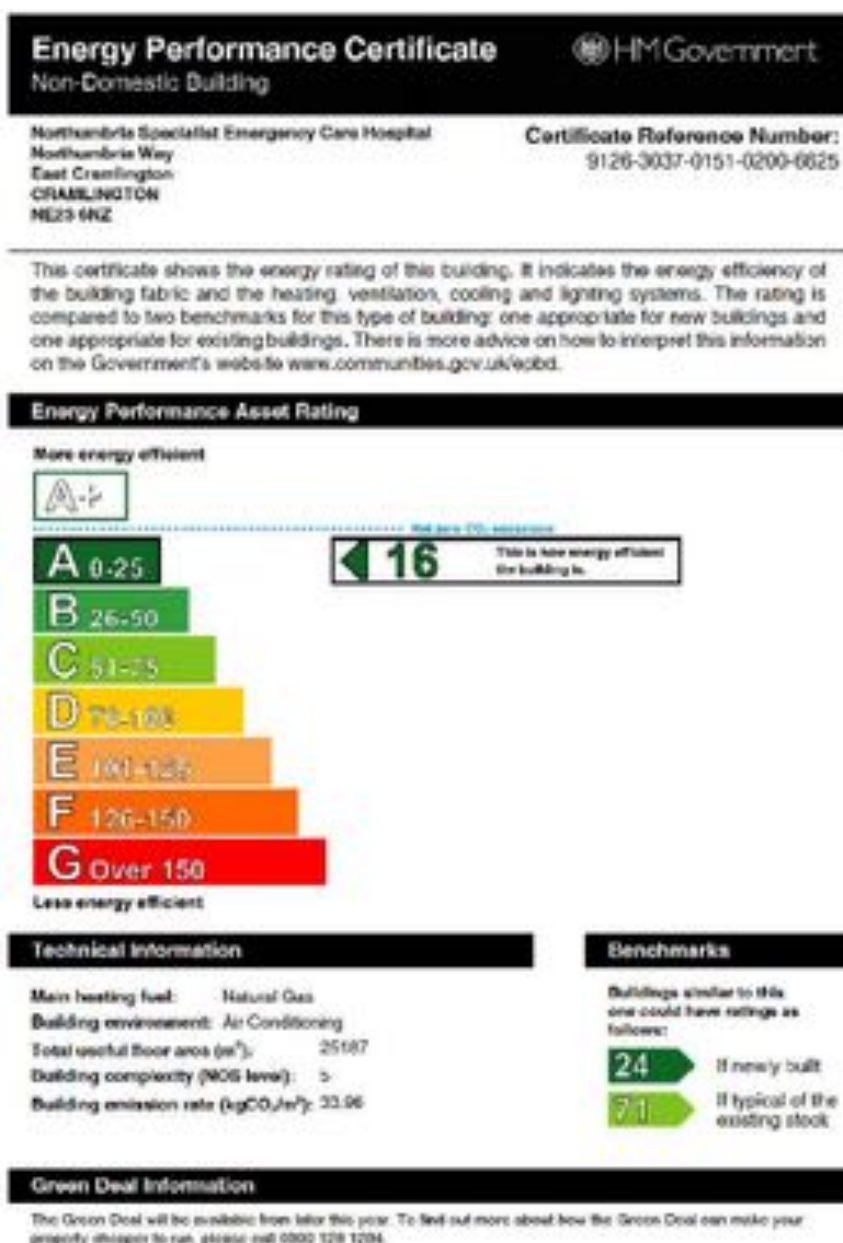
laundry building which became the new South of Tyne Pathology hub housing a number of laboratory services for the South of Tyne region and expanding to offer testing in a range of medical and other facilities.

Both projects were incorporated into the Trust capital costs for the larger schemes to ensure BREEAM standards were met for both projects alongside the need to reduce the Trusts overall carbon footprint in line with government targets. They were originally installed to heat and power their respective buildings

at carbon neutral, each has capacity to generate up to 280kw/ hour of heat and around 280kw/ hour of heat. The units are “load tracking” which means they only generate enough electricity to supply the areas they feed and with both systems running we will generate over 20% of our required electricity via the CHPs and over 10% of our overall heat demand.

The CHP's have continued to help power the hospital over the last year with around 3,000,000 KWs of energy provided into our buildings over the year at zero carbon. With the help of this ongoing work we're projecting to reduce our carbon emissions by around 800 tonnes or circa 10% over the previous year. Both CHP's also generate a financial income from Renewable Obligation Certificate (ROC) Sales of around circa £300,000 per annum for the next 10 years. The additional income aids the Trust in reducing debt and allows money to be reinvested back into patient care.

In regards to other energy saving measures introduced as part of

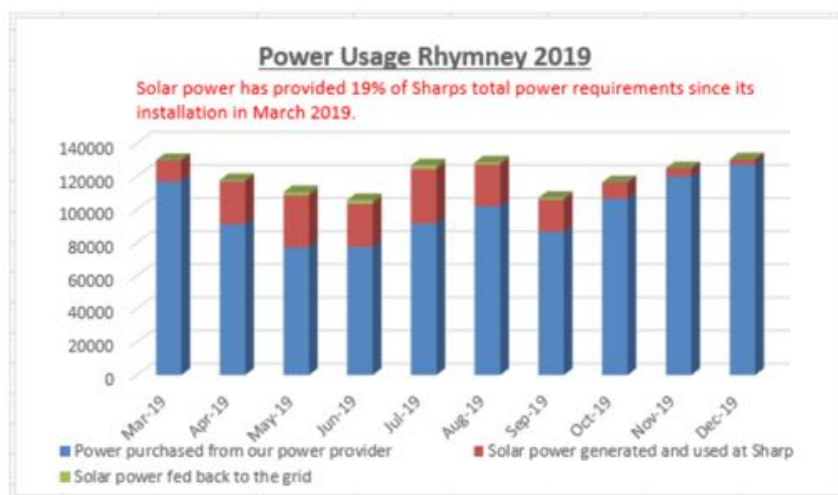


this long project SALIX funding of almost £1m, has been used to help implement many smaller schemes that have led to significant financial savings which again helps money to be reinvested into patient care helping the local community. Financial savings in the NHS is not only a better use of public funds and government spending and therefore helps the wider and local economy.

All the projects have achieved a carbon saving of over 1,500 tonnes helping save the environment; ensuring sustainable development is taken into account in all projects going forward setting a high standard in regards to energy efficiency and

attitude about how to approach any maintenance and capital schemes from all staff to ensure any potential is explored and used to best opportunity. Even if these measures require more investment initially as they often repay for themselves financially and help the environment which and our goal in becoming a more sustainable organisation from all aspects. The ongoing behavioural and attitude change is not only from those implementing the projects but those benefitting from them too as they are becoming more aware of their energy usage and how they can make changes and the potential impact no matter how small.

Although many of the smaller schemes in the project are not necessarily innovative such as LED lighting, the bio diesel CHP's are very innovative technology and have inspired and helped other organisations including NHS Trust's to follow suit and has led to opportunities to present at IHEEM and have won recognition at other awards including Lord Carter Award 2020.



saving carbon. Whereas other areas of the overall Sustainable Development Management Plan are hard to quantify, the energy project has provided clear and measured financial and carbon savings the energy project has provided clear measured benefits that we can apply going forward.

The longer term benefits are not only the initial and ongoing carbon saving and ROC's income but they have proven so successful there are plans to introduce at least one more at the Queen Elizabeth Hospital site to save more carbon and become less reliant on the national grid and more self-sufficient as we adapt to the changing climate and ensure continuity of hospital services. The benefits seen from the smaller schemes has led to an change in

THE RIDINGS CENTRE BLOOMING MARVELLOUS

AIM

To connect with our local community in a practical and meaningful way, both in the immediate and wider vicinity. To create a place for those who wanted somewhere to meet other people and grow their own produce, in a safe and local location, especially the elderly and more vulnerable as part of our ongoing partnership with AgeUK.

ACHIEVEMENTS

The repurposing of unused and unloved areas of the centre. Creation of real team morale, focussing on people's skill set, allowing them to participate at a level they wanted to and harnessed a can-do attitude.

The local community have a space of their own, a place to meet new like-minded people, to having somewhere to come together and share their experience. The centre received positive external PR, enhancing our reputation of being the heart of the community – reinforcing that the centre is not just about commerce but also giving back to the community.

IN DETAIL

At the Ridings centre, we are always looking at ways to connect with our local community in a practical and meaningful way, both in the immediate and wider vicinity.

The centre is surrounded by tall and imposing residential tower blocks with apartments (with small balconies) home to many of our regular shoppers and we thought: "...what if we could create a place for those who wanted somewhere to meet other people and grow their own produce, in a safe and local location, especially the elderly and more vulnerable as part of our on-going partnership with AgeUK." From this thought the 'Roof Top Mini Allotment' project was born. We contacted a group we had heard about - Grow Wakefield (at the time known as Incredible Edibles), who had done similar projects in the surrounding areas and together with the centre team, identified an area as being suitable for our own pop-up allotment.

The area identified for use, was an accessible compound on one of the open, top floors of the multi-story car park which is home to a small number of air-condition units serving some of the centre's





retailers. The centre team started work, clearing and making safe the chosen site, then using re-purposed pallets and unwanted timber left over from a recent tenant fit-out, which was intended to be thrown away, building the structures, greenhouse and raised planters (to ensure those with disabilities, mobility, or health issues could access the space and planters making the space totally accessible).

All manpower from creating a clean and safe workspace, building work, soil and manure moving was completed by the centre teams free of charge – 240 hours in total. To complete the project, a further investment of £1,700.00 was needed to purchase timber (£620.00), soil and manure (£960.00) and plastic to cover the greenhouse (£120.00).

The funding came from the centre's Community & Engagement budget.

The initial planting and on-going care was provided by Grow Wakefield and the people who rent the allotments at an annual fee of £10. On June 15 2019, the 'Roof Top Mini Allotment' began with fourteen raised beds, tendered by residents and a hand full of the centre's retailers.

We soon realised that the demand for the planting beds was outgrowing our supply, and the 'Roof Top Mini Allotment' grew to popular demand to an astonishing amount of 24 beds. The project has proven to be a huge and monumental success within the community and has a constant flow of new applications for plots.

As a result of this achievement, we are looking to expand the initiative by allocating a new or multiple locations within The Ridings. Providing additional support to the team of home-growers, Grow Wakefield are hosting horticultural classes, which are free of charge, for those who wish to expand their knowledge of cultivating their home-grown food. The allotment area has also taken on a new role, acting as a learning tool for a local organisation (based in the centre) Young Lives Consortium, who use the space and provide English lessons to residents.

The space furthermore acts as a canvas and provides inspiration for the many Ridings based photographers and creatives such as designers, printers and craft makers. The 'Roof Top Mini Allotment' also inspired the centre team to do more to soften, enhance and make the non-traditional shopping centre areas more appealing.

One such project is a recently created 'Blooming Lovely' living wall, which sits on the open car park level. The red brick wall is now adorned with a myriad of colourful flowers and fruits and is home to an abundance of insects and bees and makes everyone who sees it smile. The living wall was created entirely from repurposed shopfitting material from empty shops, saved from landfill, cleaned and constructed into a living wall, with its own irrigation system.

An amount of £75.00 was required to purchase equipment for the system. The project took the centre teams 20 hours to complete and takes

pride of place in a busy section of the car park, transforming a brutalist space into an explosion of fragrance and colour.

The most recent project, 'Garden of Sanctuary', sees the centre team again partnering with Grow Wakefield to create a secure, safe and accessible space to promote positive mental wellbeing for the charity's clients. The 'Garden of Sanctuary' is housed in another secure compound on the car park. The area includes raised beds for the patrons of the charity to plant and tend to, seating and tables for outdoor classes or for the patrons of the centre based 'Wakefield City of Sanctuary charity' to use to take time out and reflect and has become a haven for flowers and insects.

To complete the design of the 'Garden of Sanctuary', 50 man-hours were provided, free of charge, by the centre teams with an additional £900.00 needed to purchase essential building materials. The funding also came from the centre's Community & Engagement budget.

Plants and seeds were kindly donated by Grow Wakefield. The project of repurposing unused and

unloved areas of the centre has been a real eye opener for the onsite teams, it has created real team morale, focussing on people's skill set, allowing them to participate at a level they wanted to and harnessed a can-do attitude.

The local community have benefitted from the created spaces, from a space of their own, to the free classes, a place to meet new like-minded people, to having somewhere to come together and share their experience.

Grow Wakefield were helped by being given the opportunity to venture into a more unusual and challenging urban area, creating great PR for them, giving them the opportunity to network and publicise their expertise to the wider business community.

The centre received positive external PR, enhancing our reputation of being the heart of the community – reinforcing that the centre is not just about commerce but also giving back to the community. It really was a little idea, that grew and grew.... and keeps growing.



THE RIDINGS CENTRE

WASTE MANAGEMENT - RIDINGS CENTRE- WAKEFIELD



AIM

The project's aim was to minimise the general waste the site was producing and recycle and reuse as much as we could. Our aim is to never be satisfied until we have achieved 100% recycling or reuse.

ACHIEVEMENTS

705,576 KWH of energy saved 218,814 Metres cubed of C) saved 1,769,011 litres of water saved 1,151 trees saved 64.65% of all waste recycled an improvement in recycling of 37.3% Zero waste to landfill 9 new waste streams created A living wall of plants created from recycled plastic retail display containers 14 allotment plots and a communal greenhouse made from recycled materials

A communal space created with seating and tables made from recycled pallets and electric cable reels Fencing made from deconstructed pallets beehive platform made from pallets Grey water recycled from our roofs for the allotments Road miles and lifts reduced

IN DETAIL

The Ridings Shopping Centre in Wakefield is a community-based shopping centre, and we aim to ensure all our activities are environmentally sustainable solutions to the centre's operational needs.

These decisions we make, especially around the disposal of our waste, are at the heart of every decision we make. We aim to add to our environment and improve it for everyone public, residents above the centre, tenants, and staff alike. Our dedicated team of staff go the extra mile to recycle and re use because they see the real benefits to the centre and the environment.

Everyone contributes from the Centre Director and the management team to team members, many who give their spare time freely to recycle pallets shelving units and wooden delivery containers into useable projects like the allotment the greenhouse.

Waste recycling figures historically for The Ridings shopping centres general waste in the final quarter of 2019 were 84.01% with only 15.99% of paper recovered for recycling from the waste total.

By Quarter 3 in 2020 this had improved from 15.99% to 64.65% of all waste being recycled. An increase in materials being recycled of 37.3% taken out of general waste, with the balance of 35.35% going to an RDF facility.

This meant we were able to maintain a zero waste to landfill statistic.

In 2020 the site implemented dramatic changes to its recycling and with the full support of its tenants, a further 7 waste streams have been implemented to the sites recycling stream of paper only. The site now recycles cardboard, glass, plastic, scrap metal, wood, food, compost.

Waste streams not in these statistics are coffee cup recycling, and waste cooking oil which we have disposed of for tenants. The weight statistics of wood recycled would be higher than this had the site not reused large amounts of recyclable materials like pallets and old shelving which we would normally recycle to wood waste.

These have been re purposed to make numerous pieces of furniture, around 10 settee sized bench

seats in our community hub called Our Yard, the tables in front of these are re purposed wooden electrical cable reels.

Our Yard is a community space we created in an unused area of the centre.

The sign for Our Yard was made from pallets, and some left over artificial grass. We used dozens of pallets, 4 large wooden enclosed shelving units and wooden delivery containers to make large planters to create our allotment on the roof of the centre.

We now have 14 fully working allotments each with their own rooftop plot made from recycled wood. The allotment holders are mostly residents of the tower blocks attached to the shopping centre and one or two of our tenants who have retail units in the centre.

It is here that we also compost some organic waste from our gardens, and other organic waste, such as food waste, goes to make Biogas. The allotments use no tap water as all the water is grey water waste collected from the centres roof into IBC containers. Pallets have also been re used to create fencing around sensitive plant on the roof in the allotment



area and gates to access these areas are also made of deconstructed pallet wood. Our 7 beehives sit on a platform made of 12 pallets.

Recycled wood from a wooden shelving system in a tenant's unit was dismantled and has been used to create the framework for 2 greenhouses in the allotment area. We also re used plastic shelving display units to create the pots for a living wall in which we grow flowers and fruit, such as strawberries, for anyone to pick. Lift efficiencies have been achieved for emissions on the waste vehicle that collects the compactor which in Quarter 4 2019 contained 8.88 tonnes per lift.

By Quarter 3 2020 we had improved this to 11.21 tonnes meaning a total of 2 lifts less in 2020. With the additional recycling tonnage, we saved a further 3 lifts giving a total of 5 lifts saved.

Our waste monitoring company have calculated that our efforts have saved the following as key environmental measurements of our achievements in 2020.

- 705,576 KWH of energy saved.
- 218,814 Metres cubed of CO2 saved.
- 1,769,011 litres of water saved.
- 1,151 trees saved.

Other than time there were no costs, time which was given freely after-hours and included days off and holidays. Materials were free apart from some screws and fixings. we even managed to save our financially hard-pressed tenants over £25,000 in money on general waste disposal, together with a small income from money received for waste metal and pallets which were sold.

The wonderful thing is that this could be done by most shopping centres. The motivation is clear that it is not only environmentally friendly, but also sustainable with huge environmental benefits being achieved. It reduces and manages general waste,

making it also commercially a sensible approach to take with a little effort.

Future developments include recycling coat hangers, crockery and pottery items from our cafes and charity shops. Currently our mall cleaner's separate cardboard, plastic, and tins when they empty our mall waste bins. We would like to change these in time for tri bins to further involve the public in the recycling initiatives at site. We also aim to recycle clothes and cans from soft drinks.

We currently recycle WEEE waste through a recognised licensed disposer but have not to date included this in our waste weight figures, as we are currently replacing all halogen and fluorescent fittings. We have in 2020 disposed of 5 pallet loads of WEE waste, this will also form a substantial waste category for the next 12 months.

Separating metal, plastic, and electrical components into appropriate waste categories from these fittings turns WEEE waste into useful waste categories that will in the case of the metals earn an income.

ROADBRIDGE

HS2 SECTOR C1 - CHILTERN TUNNEL SOUTH PORTAL

AIM

Align JV is delivering the Main Works Civils Contract (MWCC) Central 1 (C1) package for HS2 Phase One. The C1: Chiltern Tunnels and Colne Valley Viaduct Sector consists of a route stretching 22 km across a predominantly rural area from just inside the M25 at Ickenham to South Heath in Buckinghamshire.

The key environmentally sensitive areas across sector C1 are The Colne Valley Regional Park (CVRP) and the Chilterns Area of Outstanding Natural Beauty (AONB).

Roadbridge are working on behalf of ALIGN to undertake several work activities across C1, predominately the earthworks activity at the South Portal site. This involves large scale earth movements to create the site platforms where the tunnel boring operation equipment, concrete batching plants and factories will be placed upon. The 55ha site next to the M25 in Buckinghamshire will act as the launch site for the 16km-long Chiltern tunnels. The South Portal site will be the biggest construction site on the project.

ALIGN who are responsible for ensuring all ecological matters are managed appropriately work collaboratively with Roadbridge to ensure that the earthworks package of works does not impact negatively on ecology in the area.

ACHIEVEMENTS

It stretches over 40 square miles, with 200 miles of river and canal and more than 60 lakes. The central section of the park contains the Mid-Colne Valley

SSSI, which consists of open standing water and woodland habitats of value for breeding birds, along with a smaller area of calcareous grassland.

The project places a huge emphasis on ecological protection and uses new innovative technologies to help further protect ecology and reduce program delays.

At the South Portal, the following project achievements have been completed to date:

- Using thermal camera drones to locate skylark nests, completing more traditional invasive surveys methods, producing more accurate surveys enabling reduced exclusion zones to allow works to progress.
- Inputting exclusion zones into machines GPS (Global Positioning System) to highlight when working near exclusion zones, in addition to standard fencing and signage.
- Use of Ground Penetration Radar (GPR) to locate badger tunnels and inform the extent of exclusions required.



- Erection of acoustic barriers and screens to reduce noise and dust disturbance to blackbird nest during works.
- Phasing topsoil stripping works to leave suitable habitat for ground-nesting birds during nesting season.

IN DETAIL

Chiltern Tunnel South Portal is situated on a large greenfield site with surrounding woodland thus being an ideal site for ground nesting birds. The need to proactively mitigate and monitor nesting bird populations on site is not only important for bird populations but also important for accurate updates to construction teams to better program works and implement required ecological mitigation. As part of the ecological mitigation on the project regular documented briefings with site personnel are carried out to highlight, the various flora and fauna on the project, the importance of ecological protection and the locations of ecological exclusion zones.

One of the contributing factors that influenced Roadbridge decisions to find alternate methods to ecological surveying and mitigation was the onset of Covid-19. This led to restrictions on getting the ecological resource on site to carry out surveys so new innovative approaches were investigated.

Our approach involved surveying for skylark (*Alauda Arvensis*) nests on a 34-hectare greenfield site, programmed for earthworks to commence in

early June. Skylarks are most common in arable farmland, making use of crops to provide the cover for nesting and bare ground for feeding. Skylarks populations have dramatically declined since the 1970s predominately due to changes in agricultural practices and reduced areas of grassland to breed in. Skylarks are one of the most difficult birds to survey and accurately locate their nests. In a construction environment it is very important to be able to accurately tell where nests are to exclude and mitigate appropriately.

Traditional surveys require ecologists to carry out watching briefs observing males displaying for territories. Based on the location they consistently drop down, a minimum 30m radius exclusion zone is required as mitigation. However, Skylarks when flying to nests tend to drop anywhere from 15 to 30m from nest and then run to the nest on the ground. To accurately be able to locate the nest, 2m walking transects are required. Walking transect surveys are very invasive and rarely find the actual nests due to them being so small and well camouflaged, meaning they are very difficult to locate by naked eye. There is also the risk of accidentally standing on a nest and a high chance that nests are missed when walking over areas for surveying, giving low confidence in survey findings. This often means the 30m radius exclusion zone implemented is often inaccurate and needs to be increased in size. These survey limitations coupled with Covid-19 restrictions and resource issues instigated investigation into a new surveying approach.

Recent technological advances in Unmanned Aerial Vehicles (UAVs or drones) were examined to improve the ability to locate these hidden nests with minimal intrusion. The Parrot Anafi thermal drone was used and proved very successful in finding nests with minimal to no disturbance to skylarks. It is a fully radiometric thermal drone weighing just

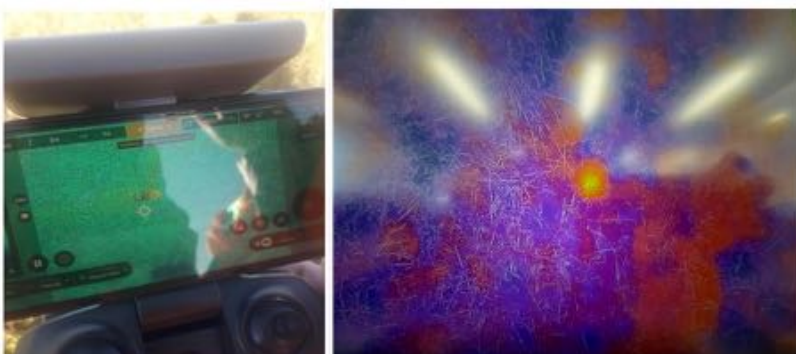


Figure 5 (left) – Nest showing bright red on thermal display; Figure 6 (right) – Another nest showing yellow on thermal display using different palette

under 400 grams and is one of the quietest available at present. With a 4x optical zoom and the ability to capture 21 mega pixel (MP) High Dynamic Range (HDR) images as well as Resolution Joint Photographic Group (R-Jpegs), it provides accurate data to assist on a survey.

At 12 metres (m) above ground level it will capture approximately a 9m² area, providing a reduction in search times, and a clear perspective from the nadir view (90-degree view) of the ground below. With the thermal camera (Forward-looking infrared (FLIR) lepton sensor), the drone can calibrate to the ground temperature and other objects to allow adjustments to be made to better lock onto a heat source. The drone can give accurate coordinates of areas surveyed and locations of nests meaning exclusions zones can be put on CAD (Computer Aided Design) drawings and then inputted in the Global Positioning System (GPS) of plant to let operators know when they are working near exclusion zones.

After the first trial run which proved successful in finding skylark nests, the findings were submitted to the ALIGN Environment and Ecology Team for review. Upon review a methodology was created for the best approach in carrying out surveys with the drone, including limitations and unsuitable conditions for use. The survey method was approved for use on site.

In all survey completed this methodology has confirmed either the absence/presence of skylark nests or Skylarks on the ground, this giving higher confidence in the methodology. In summary, in 3 hours of drone survey time (1 operator and 1 ecologist) 5 nests were found, compared to 1 nest found in 20 hours of survey time using traditional methods (2 to 3 ecologists per hour). The results resource savings in accurately locating nests.

Key benefits of thermal drone ecological surveys

- Complements traditional survey techniques
- Highly accurate survey method
- Faster survey method, so less resource required to undertake the work.

With the ability to more accurately survey and find nests in grassland area we were able to monitor nests and fledging success with minimal disturbance. Additionally, when compared to the land area required for exclusion zones using traditionally surveying techniques, greater areas of land were available for construction works to progress thus reducing program delays.

Using thermal camera drones has become a standard method for surveying potential Skylark nesting areas on this project and is planned to be used by ALIGN for future works, with HS2 looking to implement this method route wide. Roadbridge will utilize this method going forward on future projects for Skylark nesting surveys while also investigating the potential to develop and implement this methodology in other ornithological and ecological surveying.

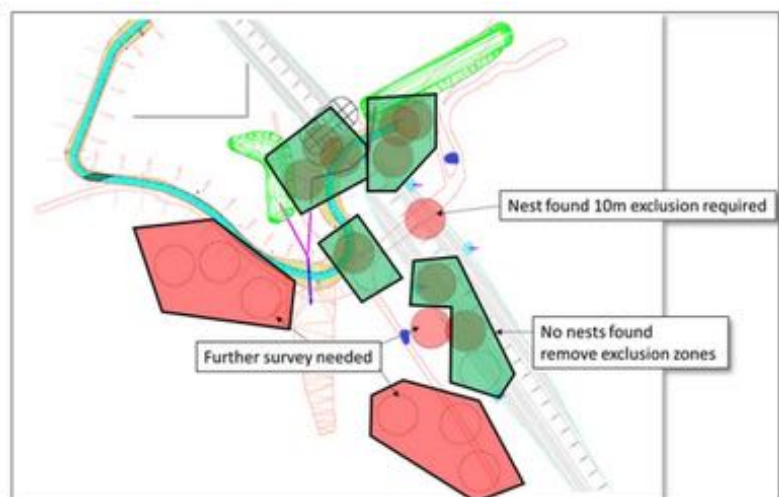


Figure 7 – Report showing where exclusion zones clash with works on design drawings to help inform programs

SAUDI ARAMCO

CREATING CARBON SINKS THROUGH TREES AND MANGROVES

AIM

Southern Area Oil Operations has introduced sustainable projects under the flagship of carbon sinks at Qurayah, Abqaiq and Khurais to name a few. Deforestation; has an impact on nature, increases ecological scarcity and can negatively impact poverty as food sources diminish as a result of damage to eco systems. Southern Area Oil Operations, aligned with the company's vision of planting 1 million trees has activated multiple native tree-planting programs along its coastal plains, wide-open deserts, and mighty mountains.

Alongside 197 parties, Saudi Arabia signed a United Nations convention on combating desertification. Achieving neutrality in land degradation is an essential element toward reaching the "Sustainable Development Goals" adopted by all United Nations member states in 2015 to protect the planet and end poverty by 2030.

In line with this vision and through the corporate strategic objectives of the company, SAOO has implemented initiatives to re-balance the status quo.

Planting mangroves provides a massive natural sink for carbon dioxide, this commenced in Aramco in 1993 and continues today. The initiative was part of a study commissioned with the Research Institute at King Fahd University of Petroleum and Minerals to re-establish mangrove forests along the shores of the Arabian Gulf. The Company also partnered with the National Commission for Wildlife Conservation and Development as well as the Ministry of Environment, Water and Agriculture.

IN DETAIL

Saudi Aramco is committed to the conservation of water resources to minimize pressure on water systems and to maximize availability for future generations. The company strives towards sustainable water resource usage through optimizing water consumption, minimizing water losses, maximizing water reuse, promoting use of alternative water resources and the use of renewable energy for more sustainable water treatment and conveyance systems.

Further, the company is committed to protecting and restoring biodiversity and ecosystem services in operational areas. The company strives to achieve a net positive impact on biodiversity by avoiding, minimizing and restoring biodiversity and ecosystem services.

Southern Area Oil Operations draws on the expertise of the company's Environmental Protection to study and implement all initiatives.





This top down collaboration ensures that project sustainability has been incorporated into respective design phases.

Southern Area Oil Operations (SAOO) houses strategically important oil facilities. The administrative area covers an area that extends over 350 km east to west and 650 km north to south. The area includes the world's largest oil field, Ghawar, and the world's largest oil processing facility in the world in Abqaiq. In addition, SAOO includes the largest seawater treatment facility in the world.

The oil and gas industry as a whole, plays a major role in furthering initiatives for an environmentally sustainable future. In alignment with oil industry role, the Company ensures that it also has an important role to play to meet Saudi Arabia's objectives for a global sustainable future. As such, the Company is committed to identifying initiatives that positively impact the environment and seeks change from linear economy to circular economy through innovative solutions. Southern Area Oil Operations is committed to using resources more efficiently to reduce impact on the environment and aligns itself with IPIECA oil and gas roadmap for delivery of the UN Sustainable Development Goals (SDG). This is evident in our commitment to implement a number of environment-improving initiatives in our vast array of facilities.

Planning and Preparation

SAOO evaluates environmental impact and potential for circular growth at design phase of all projects as an integral part of any plan to be carried out to fruition. Further, all levels of employees are encouraged to find innovative ways for minimizing water use and minimizing waste. Having such a culture allows for the organization to collaboratively identify sustainable solutions.

SAOO is an active member of the companies initiative to plant a million trees in sustainable areas and recognizes this as a key carbon offset goal.

SAOO regularly engages with stake holders to improve KPIs to encourage plans to meet those targets. Careful, considerate and constant review has ensured that plans are created with the end in mind, and are executed on time. Each organization typically draws from corporate strategic objectives of which sustainable environment is one, and derives plan to meet those elements.

Leadership Model

The company has a corporate policy and a clear vision with respect to the environment, which is communicated in 360-degree model where feedback

is regularly sought to identify improvements. SAOO works with contractors to ensure environmental objectives are understood. The leadership sets out clear strategic objectives.

SAOO constantly revises targets and makes them challenging. This is done with stakeholder involvement at varying levels, from top management, down to employees and contractors. This 360-degree view and two-way employee and contractor engagement has led to an abundance of ideas reaching execution through unequivocal dedication and collaboration. In fact, this ties in with the company's values of citizenship, safety, accountability, excellence and integrity. Examples of this are evident in the reduction of flaring, reduction in waste, reduction in energy usage and shift towards circular models.

Investment of Organizational Leadership Capital

What level of organizational leadership was shown in the decision to carry out this initiative? Leadership in SAOO takes pride in being future visionaries and forward-thinkers who lead broad initiatives using integrity and ethics. SAOO draws objectives from the strategic vision of the company and has committed resources through effective business plans to implement these initiatives

More simply, why was this a "tough decision" that required a real commitment to get implemented? Broadly speaking, this was an initiative that required

real endeavor from all stakeholders, as restoring ecosystem services is not a regular endeavor for SAOO. There was a need for decisions to be taken for provision of resources and for connecting the organization with learning specialist organizations within the company such as Environmental Protection.

How does this leadership encourage innovation to promote environmental stewardship? SAOO places great emphasis on employee driven pro-environmental innovations. The organization rewards environmental stewardship to encourage behavioral traits, this is exemplified in the organization's excellent track record for completing innovative projects. Further SAOO is completely aligned with the strategic vision of the company and the kingdom

Initiative Summary Supporting Files

Impact Metrics

1. What is the environmental impact of the initiative?

- Mangroves forests are powerful ecosystems which provide habitats for plants, birds, nursery areas for marine life, and support local communities relying on these productive ecosystems for their food security and well-being
- The deep-rooted trees prevent shoreline erosion and against storm surges
- Immense ability to remove carbon dioxide from the environment
- Mangroves store up to five times more carbon. Aramco estimates an *Avicennia marina* sequesters up to 1.5 metric tons of carbon over its average 60-year lifetime
- The Eco-park serves as a public leisure park emphasizing



on the mangroves journey and its contribution to the marine ecosystem

2. When did the initiative begin? 2017

3. What are the tangible environmental benefits of the initiative? Biodiversity, carbon sinks

4. Provide specific metrics that support and are relevant to the initiative. Data is to be current (dated) and part of an active initiative. Such as:
a. Amount of CO₂ sequestered? 930 Tons CO₂ equivalence for 2021 alone.

5. Images of system

Innovation

What makes this initiative innovative? The company conducted the world's first industrial estimation of carbon sequestration in the marine environment. Mangroves enhance fish populations by providing nutrition and economic benefits to those living nearby. Further, coastal zones are protected from natural hazards, and provide protection to local populations – just 100 meters of mangrove barrier can reduce wave heights by two-thirds.

Mangroves are among the most productive habitats on the planet for sequestering large amounts of carbon in their aboveground biomass and also for storing it long-term in surrounding soil. On a per-hectare basis, mangroves have over double the mean biomass of tropical forests. As a result, these habitats can prevent increased global warming and acidification.

What is your company doing to solve this environmental problem and why is this initiative unique? Saudi Aramco's Corporate Environmental Policy (CP-23) where the company is committed to the protection of the environment, reducing

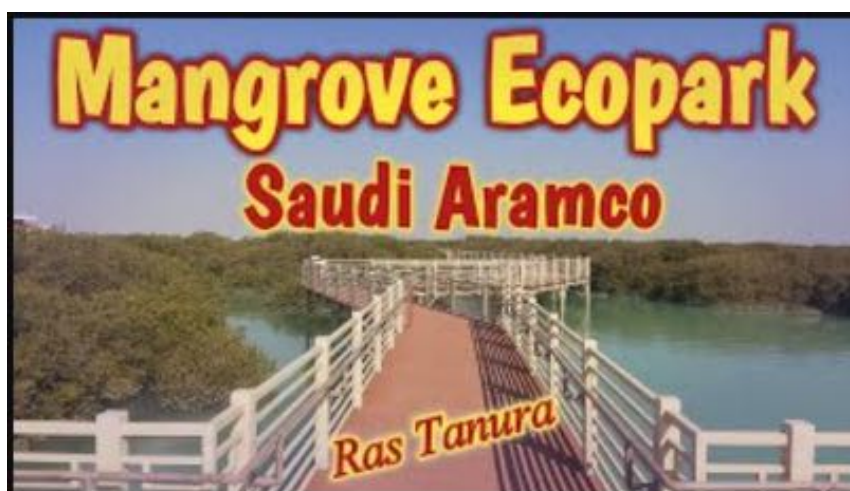
environmental footprint and the promotion of conservation of natural biodiversity.

How viable and sustainable is this initiative? The model is highly sustainable because mangroves are highly tolerant to salt water and freshwater.

Sharing of Insights and Best Practices

What are the best practices learned from the initiative? Mangroves not only provide carbon sinks but also provide fantastic habitats for fish and other marine species. Each site is comprehensively assessed by researchers and experts prior to reforestation.

Figure 1 Growing mangroves diagram- source Saudi Aramco Environmental Protection



SAUDI ARAMCO

OPTIMIZATION OF REVERSE OSMOSIS MULTIMEDIA FILTERS BACKWASH RESULTING IN REDUCED GROUND WATER CONSUMPTION

AIM

SAOO is committed to the conservation of water consumption to minimize the pressure on water resources, including groundwater, and maximize their availability for future generations. Examples of this include SAOO adopting an initiative to utilize 1st pass RO reject water, which has a high Total dissolved solid (TDS), equal to 7,000 ppm, in the backwash of the Multi-Media Filters (MMF) instead of using raw water.

The result was groundwater savings of up to 34 MM gallons per year. This aligns the company operations with Saudi Arabia's vision to preserve the integrity of the environment and sustain its resources, especially, non-renewable ones.

SAOO recognizes this initiative as a circular opportunity.

By adopting the right design parameters, company minimizes externalities by optimizing water usage, thereby minimizing ground water usage. The process keeps water resource in use and optimizes the value generated in interfaces of water systems with other systems.

This in turn maximizes preservation and enhancement of aquifer restoration, pollution prevention, quality of effluent and so on. Diagram 1 reference Water and Circular Economy White Paper, Ellen Macarthur Foundation

illustrates the general intent of SAOO when designing or optimizing water systems.

IN DETAIL

Saudi Aramco is committed to the conservation of water resources to minimize pressure on water systems and to maximize availability for future generations. The company strives towards sustainable water resource usage through optimizing water consumption, minimizing water losses, maximizing water reuse, promoting use of alternative water resources and the use of renewable energy for more sustainable water treatment and conveyance systems.

Further, the company is committed to protecting and restoring biodiversity and ecosystem services in

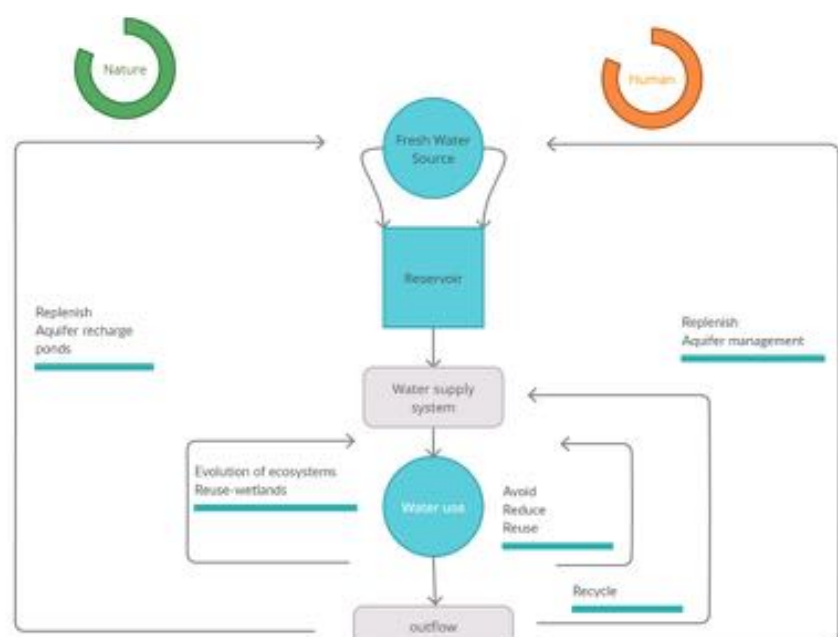


Diagram 1 Water and Circular Economy

operational areas. The company strives to achieve a net positive impact on biodiversity by avoiding, minimizing and restoring biodiversity and ecosystem services.

Southern Area Oil Operations (SAOO) houses strategically important oil facilities. The administrative area covers an area that extends over 350 km east to west and 650 km north to south. The area includes the world's largest oil field, Ghawar, and the world's largest oil processing facility in the world in Abqaiq. In addition, SAOO includes the largest seawater treatment facility in the world.

The oil and gas industry as a whole, plays a major role in furthering initiatives for an environmentally sustainable future. In alignment with oil industry role, the Company ensures that it also has an important role to play to meet Saudi Arabia's objectives for a global sustainable future. As such, the Company is committed to identifying initiatives that positively impact the environment and seeks change from linear economy to circular economy through innovative solutions. Southern Area Oil Operations is committed to using resources more efficiently to reduce impact on the environment and aligns itself with IPIECA oil and gas roadmap for delivery of the UN Sustainable Development Goals (SDG). This is evident in our commitment to implement a number of environment-improving initiatives in our vast array of facilities.

Planning and Preparation

SAOO evaluates environmental impact and potential for circular growth at design phase of all projects as an integral part of any plan to be carried out to fruition. Further, all levels of employees are encouraged to find innovative ways for minimizing water use and minimizing waste. Having such a culture allows for the organization to collaboratively identify sustainable solutions.

SAOO regularly engages with stake holders to improve KPIs to encourage plans to meet those targets. Careful, considerate and constant review has

ensured that plans are created with the end in mind, and are executed on time. Each organization typically draws from corporate strategic objectives of which sustainable environment is one, and derives plan to meet those elements.

Leadership Model

The company has a corporate policy and a clear vision with respect to the environment, which is communicated in 360-degree model where feedback is regularly sought to identify improvements. SAOO works with contractors to ensure environmental objectives are understood. The leadership sets out clear strategic objectives.

SAOO constantly revises targets and makes them challenging. This is done with stakeholder involvement at varying levels, from top management, down to employees and contractors. This 360-degree view and two-way employee and contractor engagement has led to an abundance of ideas reaching execution through unequivocal dedication and collaboration. In fact, this ties in with the company's values of citizenship, safety, accountability, excellence and integrity. Examples of this are evident in the reduction of flaring, reduction in waste, reduction in energy usage and shift towards circular models.

Description

Optimization of reverse osmosis multimedia filters backwash resulting in reduced ground water consumption

Initiative Summary

SAOO is committed to the conservation of water consumption to minimize the pressure on water resources, including groundwater, and maximize their availability for future generations. Examples of this include SAOO adopting an initiative to utilize 1st pass RO reject water, which has a high Total dissolved solid (TDS), equal to 7,000 ppm, in the backwash of

the Multi-Media Filters (MMF) instead of using raw water. The result was groundwater savings of up to 34 MM gallons per year. This aligns the company operations with Saudi Arabia's vision to preserve the integrity of the environment and sustain its resources, especially, non-renewable ones.

SAOO recognizes this initiative as a circular opportunity. By adopting the right design parameters, company minimizes externalities by optimizing water usage, thereby minimizing ground water usage. The process keeps water resource in use and optimizes the value generated in interfaces of water systems with other systems. This in turn maximizes preservation and enhancement of aquifer restoration, pollution prevention, quality of effluent and so on. Diagram 1 reference Water and Circular Economy White Paper, Ellen Macarthur Foundation illustrates the general intent of SAOO when designing or optimizing water systems.

Diagram 1 Water and Circular Economy

Initiative Summary Supporting Files

Impact Metrics

1. What is the environmental impact of the initiative?
 - Save 34 MM gallons raw water
 - Reduced load on waste water treatment plant leading to reduced operation and maintenance cost
2. When did the initiative begin? Pilot study started on June 2019 and fully implemented by January 2020
3. What are the tangible environmental benefits of the initiative? 34 MM gallons of Groundwater saving, water reuse
4. How have they been measured?
 - Flowmeters are used to check the amount of water.

- Multimedia filters and water products are checked with the internal and external mechanical components of multimedia filters inspected
- The RO feed water quality is continuously monitored. As presented in table 1, the monthly average of the RO feed water quality shows that reusing the 1st RO reject as an alternate source to groundwater for backwashing the filter is acceptable since no impact on the feed water quality was observed.

Parameter Pre-implementation quality control (QC) results Post implementation quality control (QC) results

SDI 1.4 1.5

pH 7.4 7.4

Sodium (ppm) 300 286

Calcium (ppm) 184 212

Magnesium (ppm) 70 71

Sulfate (ppm) 445 475

Chloride (ppm) 530 540

Bicarbonate (ppm) 231 230

Hydroxide (ppm) 0 0

TDS (ppm) 1817 1814

Barium (ppm) 0.04 0.03

Potassium (ppm) 26 27

Strontium 3.6 3.7

Table 1 QC data water quality pre vs post implementation

5. Any financial benefits?
 - The reduction of 34 MM gallons of ground water and utilizing first pass RO reject resulted in a cost saving of about \$ 2.30 MM per year.

6. Materials condition of multimedia filters

One of the main elements to evaluate the trial results was to check and inspect the internal material for multimedia filters for any damage to the multimedia filter materials and its associated equipment (valves, pipe, XVs ...).

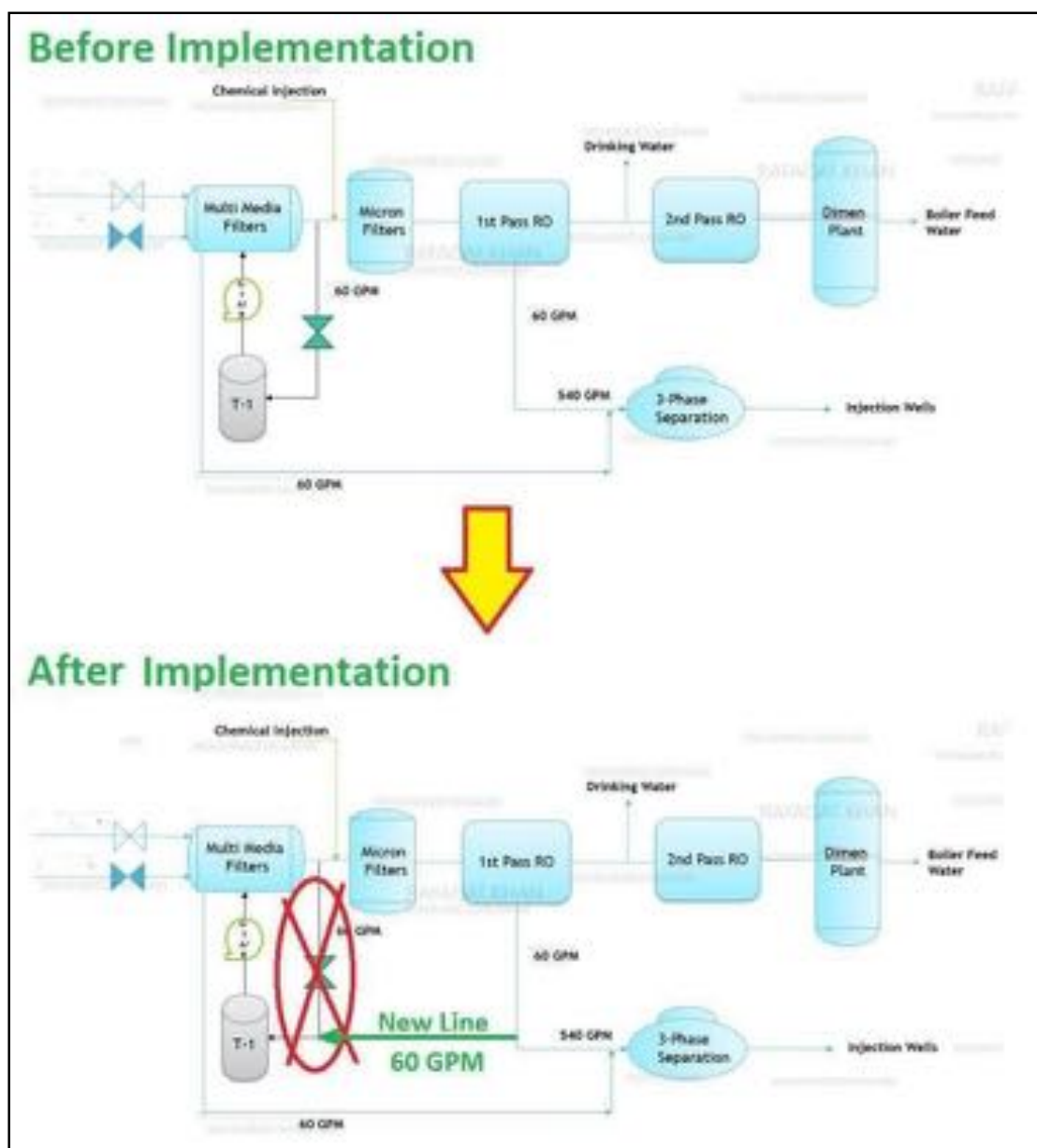
During the T&I, the condition of multimedia filters material including internal materials, valves, pipes, backwash pump and XVs were evaluated and checked to ensure there is no damage.

7. Images of system

Innovation

What makes this initiative innovative? The company is utilizing this technology for the very first time. The geographical extent of operations and the nature of scarcity of water makes this an absolute must for a sustainable environment.

What is your company doing to solve this environmental problem and why is this initiative unique? Saudi Aramco's Corporate Water Conservation Policy (CP-25) commits the



company to the conservation of water resources to minimize the pressure on water systems, including groundwater, and to maximize their availability for future generations.

How viable and sustainable is this initiative? The idea can be implemented for all facilities that have similar RO reject water. Further, the initiative is simple to operate and maintain. All of the new modifications have been implemented permanently

Sharing of Insights and Best Practices

What are the best practices learned from the initiative? Positive impact on water systems by enhancing circularity for water conservation and avoidance of depletion of aquifers. The initiative provides more lead time for aquifer replenishment. The conservation of water also reduces soil saturation, reduces waste water flow and pollution. SAOO has realized through this initiative that similar principles may be applied in other water systems to increase circularity of water. This is a paradigm shift which will have a positive impact on generations in the future in line with the Kingdoms vision 2030.

How is this best practice being shared? The initiative is currently being shared across the organization at facilities with similar operations. Through operational excellence, the innovation will also be presented to other O&G companies.

How far-reaching is the scope of the initiative? Water conservation is a key pillar of any successful environmental program. This initiative ties in with the vision of Saudi Arabia 2030.

Investment of Organizational Leadership Capital

What level of organizational leadership was shown in the decision to carry out this initiative? Leadership in SAOO takes pride in being future visionaries and forward-thinkers who lead broad initiatives based on integrity and ethics. SAOO draws objectives from the strategic vision of the company and has committed

resources through effective business plans to implement these initiatives.

More simply, why was this a “tough decision” that required a real commitment to get implemented? Some of the initiatives presented here required problem solving and decision making. Making it important to effectively communicate the idea to all stakeholders, and to ensure the strategic objectives were clear. Building relationships with service providers, specialist in each field were required to ensure that the programs would be sustainable.

How does this leadership encourage innovation to promote environmental stewardship? Employees are encouraged by leadership to grow ideas and are motivated to successfully carry out assignments to service the goals of SAOO. Further, having a 360-degree approach has made SAOO agile and people orientated.

SHARP CLINICAL SERVICES UK

BUILDING FOR THE FUTURE

AIM

In 2017 Sharp made a decision to move from its 45,000 sq. ft. leased facility where it had been based since 1988 and invest £9.5m to provide a new 110,000 sq. ft. purpose built centre of excellence at Rhymney in the South Wales Valleys.

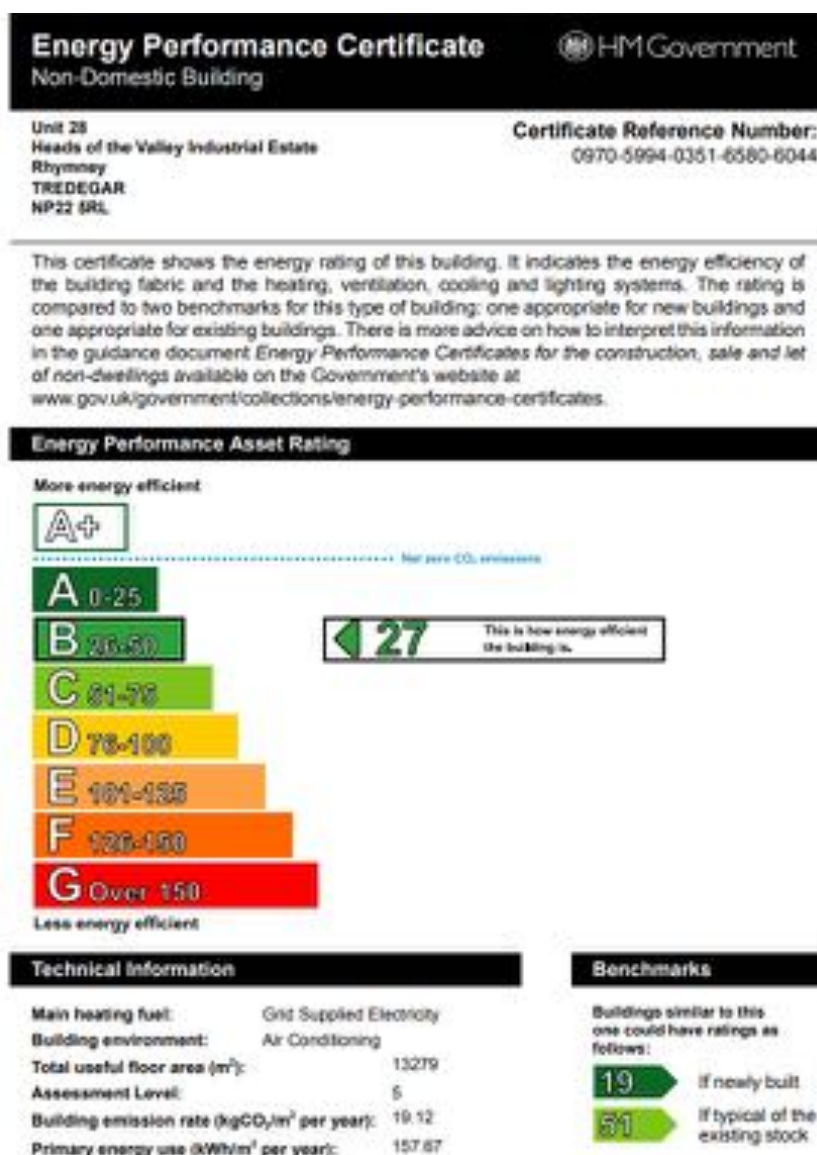
Sharp had always taken its environmental responsibilities very seriously but had been restricted in many of its actions due the property not being owned by Sharp. Much of its plant and equipment was dated and inefficient and due to the size restriction of the building, we were very limited in our actions.

The purchase and refurbishment of our new site gave Sharp the opportunity to review our environmental position. Our aim was to make a positive change to our business and the way we operate, and to deliver a building that was not just energy efficient but one that incorporated good environmental practices, that would operate with a low carbon footprint and make a statement to its workforce, customers and community.

The move also allowed us for the first time to investigate the possibilities of renewable energy and to review its waste streams to further improve its environmental performance.

ACHIEVEMENTS

In June 2019 Sharp were very proud to announce the completion of our building and the movement of its staff to its state of the art facility that provided its customers and staff with an efficient and environmentally friendly business that operates with the minimum impact on the environment and its local community. The move has not only allowed Sharp to review the building but also its policies, procedures and waste streams that have resulted in Sharp now being a 100% landfill free site.



The building is a testament to Sharp's staff and contractors who have provided a site that incorporates many different technologies, efficient plant and equipment and energy saving initiatives but also includes Sharp's first renewable energy project for the business. The project has also resulted our Parent group UDG Healthcare plc using our project as a case study for all its businesses worldwide, promoting the need to review and improve environmental performance and renewable energy possibilities. The last two years have given Sharp the chance to follow what it believes in, providing a modern business that does not just address the need to survive but also to thrive in the environment it operates in.

IN DETAIL

Based in South Wales and employing 71 staff, Sharp Clinical Services UK Ltd is a division of UDG Healthcare Plc (UDG) providing packaging, storage and distribution solutions for clinical drug trials in temperature controlled and clean room environments. This consists of primary and secondary packaging clean rooms at ambient 15°C - 25°C, refrigerated and frozen warehousing ranging from 8°C down to - 70°C and also a secure drug vault storage for controlled substances.

It had been long been recognized that the site that we were operating from was not suitable for future

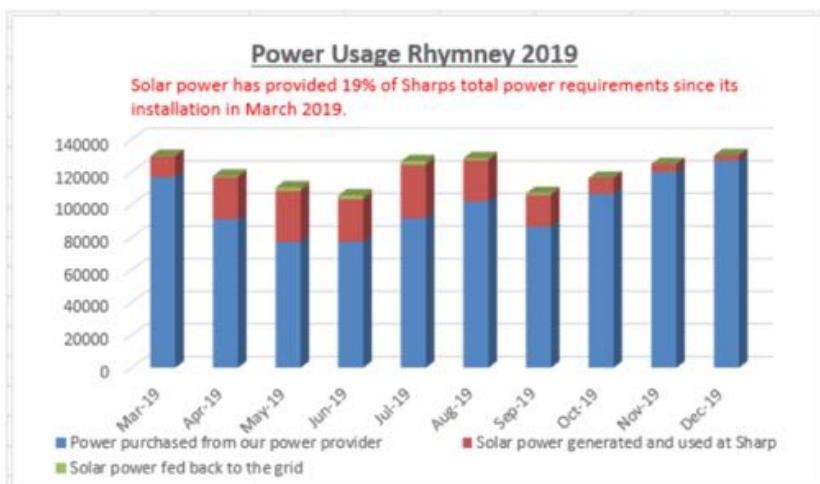
growth due to its size and it being a rented property that Sharp had little control over. It was decided that to move forward a new facility would be required which gave us the opportunity to expand as a business and allow us to meet all of our business needs and aims.

The project consisted of the selection of an internal senior management team and the sourcing of a suitable principle contractor who would provide a site that not only met our business needs but was energy efficient and incorporated green purchases and renewable energy initiatives that would reduce our environmental impact and help Sharp become more environmentally sustainable. The project was fully supported by its senior members and had the full backing of our parent company UDG Healthcare PLC.

This was a big challenge for the business who had very little experience in these tasks. The project took two years to complete but has been a great success resulting in a building that Sharp is very proud of and enjoys sharing with its staff and customers.

The new 10,000m² building is four times the size of our previous site and includes many efficient and energy saving initiatives that include:

The Building - Awarded an environmental performance certificate grade B for its insulation properties this was only 2 points away from being a level A, which was a great achievement for the site.



Renewable Energy projects

- The team reviewed many renewable systems including rainwater harvesting, Wind turbine generation, heat recovery and heat transferal systems resulting in:

A 250kWp roof mounted solar panel system. The system was introduced in March 2019 and is forecast to provide 15 - 20% of Sharps total annual power

usage for the site. The system will provide 1.7 Million tonnes of carbon savings over its 25 year life span and save Sharp one million pounds in purchased electricity.

Heat Recovery: H/VAC air handling units purchased to supply heat and filtered air to our production rooms can capture up to 80% of the heat leaving the rooms and re-direct this heat back to the building thus avoiding it being exhausted to atmosphere. This reduces both our environmental impact and energy costs that would be required to heat fresh air.

Energy Savings

Lighting: All lighting on site consists of PIR operated energy efficient LED lighting. There are no light switches at any points in the business. All lighting turns on when someone enters an area and are programmed to switch off after a predetermined time thus saving on wasted unnecessary lighting energy.

Energy Technology List (ETL). Various plant and equipment were purchased from the government Energy Technology list. This list identifies the latest high energy efficiency products which will help Sharp to remain efficient in its energy usage.

Hot water Heating

Parts of our hot water systems used to operate our H/Vac systems are re- directed to areas of our wet heating systems to provide heat on other areas of the building.

Building Management System.

This computerized “real time” monitoring system can control critical parts of our plant from anywhere in the word giving a real time performance logs and providing alarms when selected plant and machinery or heating systems are not performing to their required parameters. This system allows Sharp to react quickly and effectively when dealing with a problem and also giving us the ability to set our

systems to their optimum performance to ensure the plant operates efficiently at all times.

Water Savings

PIR Operated taps have been introduced in all W/C and changing areas to ensure that water is supplied at a controlled temperature and only used when required thus ensuring that no water is wasted and less energy is used in the heating of our hot water.

Reduced Volume cisterns have been installed on all W/C's to ensure that only the minimum amount of water usage is maintained.

Improvements in waste management

Moving to a new site has also given us the opportunity to review our waste management streams giving us more choice in the selection of waste companies we can use and thus more of a say in how we manage our waste streams. This has resulted in Sharp being able to recycle over 90% of all its waste and allowed us to achieve its goal of being a 100% landfill free site.

Sharp recognize that despite its efforts there is still much more that can be done over the coming months and years to improve our environmental performance and reduce our carbon footprint even further. The next 12 months will see Sharp continue to improve the way it measures its environmental performance and also look to grow its environmental management systems to allow us to work towards gaining environmental certification such as ISO14001 or Green Dragon environmental standard.

The project has been a great success in many different ways and we are very proud of the hard work and commitment that our staff have shown in achieving our goals and by providing us with a sustainable business for the future.

SINDH ENGRO COAL MINING COMPANY

THAR GREEN DRIVE

AIM

Pakistan is rapidly moving from being classified as “water-stressed” to “water-scarce” country. Decline of water availability per-capita has given rise to serious concerns regarding future food security.

SECMC started its Coal mining operations in desert of Thar which is the arid region of rolling sandhills. The irregular rain pattern and dry spell made it witnessed long tenure of below-average crop production and drought-like situation resulting in forced migrations and cattle loss creating famine and food insecurity.

In this challenging scenario, SECMC stepped forth and launched Thar Green Drive (TGD) with following major initiatives:

1. **Thar Million Tree:** To combat climate change in the region. So far 750,000 trees have been planted which sequester 16 K-Tons of CO₂/ annum while producing 88K-Tons of Oxygen in the process.
2. **Bio-Saline Agriculture:** To promote self-sufficiency after successful demonstration on 50 Acres pilots by involvement of local community and collaboration with Xinjiang Institute(XIEG-China), Karachi University(ISHU-Pakistan) & Pakistan Agricultural Research Council(PARC). Replication was done in nearby villages namely New Senhri Dars(NSD) and Vakrio.
3. **Bashir Ansari Green Park:** To ensure well-being of community and preserve history of first ever Coal Mining initiative in Thar using Vertical Shaft Technology by Bashir Ahmed Ansari, an exemplary recreational facility over 65 Acres is setup with Mechanized Merry go

round, Mini Zoo, Bio-saline pilots, Fishponds to motivate local folks for sustainability initiatives.

4. **Aquaculture:** Gorano Reservoir was chosen for this to serve as hub of food security and successful attempt was made by distribution of 18 Tons of fish(2019) and 8 Tons(YTD-2020). It resulted in attraction of piscivorous birds which increased its significance as IUCN declared it as New Habitat for Migratory Birds.

With all these, SECMC is on its way to ensure Sustainability in Thar by ensuring compliance with UN Sustainable Development Goals of Zero Hunger and Climate Action.

IN DETAIL

SECMC pioneered the first open pit coal mining operation of Pakistan with the vision of continuing its operations in a sustainable manner. The main objective is to change the perception of Coal mining by illustrating through our efforts under the umbrella of TGD to strengthen the three pillars of Sustainability i.e. Society, Environment & Economy and to make positive change in lives of surrounding community and make this a better and secure place for them and their future generations.

Background:

One of the crucial operations associated with coal mining is dewatering around the mine site from 2nd and 3rd aquifers. The dewatering results in pumping out highly saline water (TDS>5000), in-adequate for human consumption. Hence, our management sat down with other experts and discussed innovations for effective water resource utilization to ensure

its availability for future generations and making it a landmark by provision of maximum benefits to People and Planet through it which actually resulted the launch of Thar Green drive.

Elements of Thar Green Drive(TGD):

The highlights of constituting elements of TGD are elucidated below:

Thar Million Tree Program (TMT):



This was not merely a campaign to plant one million trees but a vision to make greener Thar by collaboration with various entities, adoption of proven plantation techniques, development of nursery with capacity of 0.5 Million saplings and a mission to impart awareness among local community to combat desertification jointly.

Starting from the vicinity of Coal-mine, the scope was extended to One-Home, One-Tree which covered Islamkot and nearby villages including Singharior, Thario Halepoto, Vakrio, Jindo Dars, Senhri Dars, Pamohar, Malhnor, Lonya Sama, Changer Samejo etc. where 10 Moringa saplings are provided to each home and the villagers were educated to ensure maximum survival. Furthermore, the collaboration

was done with Arche-noVa to empower residents of 20 villages by providing them opportunity to develop value chain of Moringa and earn their livelihoods by selling it to Arche-noVa. This served as an aid in plantation of 130,000 saplings apart from site.

New techniques are adapted instead of conventional and Miyawaki method is deployed across 80 acres of on-site plantation which allows the plantation of different species in single block to attain 10 times more growth. Dense plantation with added

advantage of moisture retainment results in a forest like atmosphere attracting wildlife in its realm. Additionally, Ollas-Pitcher Irrigation system (Premaculture) was deployed by use of 100 pitchers on Moringa Saplings to evaluate and communicate the possibility of low-cost alternative of drip irrigation.

Donations of 325,000 saplings to several authorities including Sindh Forest Department, Armed forces, PPHI, Local government, Sindh Police, Rural Development Authority, Youth Group Tharparkar etc. were made to align them on

our mission and stretched it to cover maximum area. So far, 750,000 saplings are planted altogether as part of our commitment to turn vision to reality.

Bio-saline Agriculture:

This is the next element of TGD which enabled self-sufficiency and aided in poverty eradication as income from agriculture and cattle farming is the primary source of income for surrounding community. But the sole dependence on rainfall to have yield is the biggest challenge for their survival. As Thar has underground water reserves of approx. 80 billion m3 which are enough to sustain this kind of farming for many years to come.

This was initiated on 50 acres in consultation with various national & international institutes and successful growth of various cash-crops are Sunflower, Ladyfinger, Carrot, Cotton, Wheat, Spinach and Radish was witnessed. The collaborations in this regard include:

- MoU signed with Institute of Sustainable Halophyte Utilization(ISHU), Karachi University for developing bio-saline agriculture for drought-stricken population of Thar. It resulted the growth of Panicum fodder on Saline water for which Suede plants were used to control the salinity of soil.
- MoU signed with Xinjiang Institute(XIEG-China) to develop cereal and food crops.
- MoU signed with PARC for development of commercial value chain of and support provision for sustainability of existing Bio-saline projects.
- 4-acre pilot farm on bio- saline agriculture being developed with help of local farmers.

The expertise of these institutes thru these MoU are utilized effectively and resulted in several success stories of Apple Ber, Rhodes Grass, Castor Oil etc.

Apiculture was also then introduced to explore possibility of honey-bees survival and obtaining yield of pure honey after appropriate training of relevant workforce. Recently 08 to 10 Kg/hive was obtained which highlighted the possibility of this new livelihood mean for local community and will serve in avoiding the extinction of honeybees as well.

Bashir Ansari Green Park:

It is a recreational facility which covers an area of more than 65 acres and is the symbol of heritage protection, biodiversity preservation, effective resource utilization and wellbeing of community.

It is developed to preserve the history of first ever Coal Mining initiative in Thar region using Vertical Shaft Technology by Bashir Ahmed Ansari. Two wells

Bashir Ansari Green Park



constructed during mining by Mr. Bashir still exists and till date as a symbol to prevail the efforts exerted for this project.

Kids-Playing Area equipped with various swings specifically Mechanized merry-go-rounds etc. and Bagh-e-Firdous are the hub of attraction for local community and leave them astounded. Biodiversity Park is another attempt of preserving variety of indigenous plant species including Kandi, Babur, Rohero, Kumbat etc.

Date-Palm Orchard & Moringa Orchard is another positive prospect of Green Park which is not just to intensify the sense of closeness to nature, but the provision of drip irrigation there also illustrates the message of resource conservation to all visitors. Here the Bottled Gardening concept was also introduced for community awareness regarding the alternatives of drip irrigation for easy adaption.

Wildlife Conservation and Gorano Aquaculture:

The broad-spectrum of TGD is validated by this initiative which is multi-dimensional in terms of profiting both Environment and Society i.e.

- IUCN Pakistan, SECMC and Thar Foundation (TF) formalized a collaboration, to undertake biodiversity conservation with aim to protect endangered vulture species as first initiative. The project entails establishment of a Vulture Conservation and Breeding Centre (VCBC), as well as training to Thari communities on preserving and protecting vultures in their natural habitat.
- Gorano is the facility to dispose excess volume of water resulting from mine dewatering. However innovative minds led to

initiate Aquaculture there for which more than 100,000 fish-seedlings (3-4inches in size) were released and within 8-9 months, fishes became size of more than 1Kg only on Natural Feed (Zooplanktons, Phytoplanktons, Algae and other marine insects available in Pond). It was then declared fit based on tests from a laboratory which are done to evaluate its fitness for consumption.

Benefits:

Environmental Benefits:

Following benefits are indicative of our efforts to cater the environment aspect of sustainability,

- **Resource Conservation:**

Effective utilization of Highly saline water for bio-saline agriculture further optimization thru drip irrigation and its low-cost alternatives like Pitcher and bottled drip irrigation and use of Miyawaki technique further illustrates this aspect. Pilot project of Bottled drip irrigation was also completed in Sohna Mah Village with hundreds of Moringa saplings planted.

- **Carbon Footprint Reduction:**



Gorano - A wildlife Heaven

As 1 tree absorbs 48lb of CO₂ and releases 260lb of O₂. With these basis, current plantation of 750,000 is expected to sequester 16,000 tonnes of CO₂ while releasing 88,000 tonnes of O₂ per annum with additional benefit soil erosion prevention.

- **Symbolism & Commercial Motivation:**

Extensive research is done for selection of plants with respect to harsh climatic conditions which led to the development of Moringa orchard due to its miracle nature. Also, the commercial aspect of this is explored as various end-users including Pharmaceuticals are available in market to use this highly valuable raw material.

- **Wildlife Preservation:**

As result of vulture conservation program, 250 critically endangered vulture species as per IUCN Red List, spotted in Nagarparkar indicating their return which is a positive sign in terms of wildlife conservation.

Ecological report on advent of migration of different species of birds published by IUCN says that Gorano pond which is a unique wetland of deep subsoil saline water pumped out from Thar coal mine has attracted various 'piscivorous' birds (those that feed on fish) and several other species of birds and is, therefore, becoming a favorite wintering abode of many migratory birds.

Social Benefits:

As we envisioned sustainability, these initiatives pinpointing the society pillar of sustainability turned those into reality and aided to make followings positive changes:

- **Enabling Self-sufficiency:**

Setting up of saline agriculture on 05 acres in New Senhri Dars (NSD) Village where 70 blocks of size 12'x12' (each) were utilized for this purpose in which 31 blocks are specifically used for growing vegetables including Lady finger, Eggplant, Green Beans etc. However, millet and

sesbania were grown in remaining 46 blocks. Pride of Self-sufficiency gained by villagers is remarkable achievement of SECMC to bring positive change in their lives.

- **Malnutrition Reduction:**

Distribution of Apple Ber and fishes among local community epitomized the eradication of food insecurity and malnutrition and empowered them to take risk of opting saline agriculture and aquaculture and exploration of other avenues to earn their livelihood.

- **Growth of livelihood opportunities:**

High yield of Rhodes grass(15Kg/acre) based on saline agriculture served as animal feed and helped farmers in raising livestock.

- **Community Well-being:**

Aesthetic view of perfect recreational facility of Green Park and Gorano reservoir serves as an aid for mental health and well-being of local community.

- **Community Awareness:**

Collaboration with arche-noVa, Schools, PPHI, RDA and Tharparkar Youth Foundation and other local administration authorities in raising awareness of Plantation thru one-Home, One-Tree campaign.

Economic Benefit:

The economic benefit under the shed of TGD is quite high because as the cost we spent turns to investment when we observe the long-term and short-term environmental and social benefits These mainly include:

- **Commercial Value Chain:**

25Kg of Moringa in first yield was provided to pharmaceutical company against which the cheque of PKR 22,625 was received and handed over to TF which is the CSR arm of SECMC.

- **New Avenues for Livelihood:**

SECMC believes that Bio-saline Agriculture using underground mine water can bring an agricultural revolution in Thar and Drought in Thar will become irrelevant which will ultimately increase the livelihood opportunity.

Plantation of 120 Apple Ber (Jojoba) trees per acre has yielded 5-7Kg fruit/tree annually with total worth of approx. PKR 35,000 to 40,000/ annum.

Yield of 08-10Kg of honey per hive in 03 months has obtained with total worth of approx. 9,000 to 12,000 and this can be increased by increasing number of hives.

- **Optimization of current practices:**

Year-round fodder production has stopped migration during dry seasons and improved fodder has shown higher yield of milk, at least for Thar Block – II where our organization operate

- **Lawful Earning opportunities:**

Salaries of all workers associated with TMT and GP is a sustainable source of lawful earning for them to support their families even in all operations of site, there is a policy to hire 100% unskilled labor from local community.

- Expansion of existing bio-saline area by Community Cooperative Model or Investor Cooperative Model is medium-term approach to increase penetration of our efforts in community.

Conclusion:

All these worthy initiatives which are either completed or will continue as ongoing projects will bring sustainable progress and positivity to the community. Those who were deprived of necessities are now gaining social and economic sustenance through the unshakable resolve of SECMC, TF and its volunteers from the community around. Our next step is to make the nearest city “Islamkot” the first sustainable development goal compliant locality of Pakistan by 2023 on the same lines we have done for Thar Block – II where we operate just 30Km away.

Future Development Plans:

Indeed, the whole drive was milestone marking the advent of new era of development in Thar but the vacancy of further improvement still exists hence the efforts will remain continued for further development and its propagation to larger extent by following means:

- Replication of saline agriculture as like NSD village to 3 more villages by the mid of 2021
- Training of selective people from nearby villages of Gorano on Fish-Pond development techniques.
- Completion of TMT by the end of this Monsoon season.

SRL PUBLISHING

SRL PUBLISHING TREE PLANTING

AIM

Being in one of the most environmentally damaging industries, we couldn't operate as most publishers do. Our environmental ethos is at our core.

We all share this world and we all need to do our bit in keeping it sustainable. Every single year, over 77 million books are printed in the UK, and are destroyed because they remain unsold. This is due to publishers printing thousands and thousands of copies up front to lower the print cost, yet they print so many most are unsold.

We only print what we sell, so we have minimal wastage. We made a promise to the environment to never print copies up front, even though it damages our profit margins.



*We are proud members of the
United Nations SDG Publishers
Compact*

ACHIEVEMENTS

We've saved over 500,000 trees from deforestation, and since June 2020 have been climate positive. We've planted over 2,600 trees, and we've also supported projects around the world in removing cO2. So far, we've removed over 46 tonnes of carbon emissions.

IN DETAIL

We are SRL Publishing, the **world's first climate positive** publisher, who believe passionately in the power of story telling.

At the start of the 2010s publishers feared the death of the paperback due to the rise of electronic format editions, but sales have been at their lowest since 2011. The sales of physical books have been steadily increasing at an average rate of 5% every year since 2014. While we publish on both e-book and print, there's nothing more amazing than holding a physical product that has been passed down by family members for years. In our office we house a very special, 70 year old Good Housekeeping* cooking book to remind us how important and sentimental physical books can be.

Our strap line is ***Breaking the Silence***, and we aim to do just that.

We are all too familiar with the issues in today's society and the stigma that surrounds. We want to publish not just great books, but great books that help. Books that tackle the tough issues, books to open up difficult conversations and books to help bring people together.

All of our books and authors are enormously special to us in their own, individual way. We believe that a story can evoke a large range of emotions; they



can make you cry, make you laugh and, most importantly, change a life. We want our readers to not just read our books, but live our books. Unlike some publishing houses, we pride ourselves on giving ambitious new authors the chance that is so rarely available in the publishing industry today.

While some years ago publishing would have been one of the more environmentally damaging industries, developments stemming from changing attitudes towards the environment mean that this is no longer the case. In the UK alone, **over 77 million** books are destroyed each year due to overproduction. Our business model is inherently **sustainable**: by only printing what we sell.

We deliberately waive our profit margins for the sake of the environment.

Therefore, we have committed ourselves to being an environmentally friendly company, implementing the use of FSC paper in all our books and promotional material and actively encouraging writers to correspond and submit to us electronically. We are supporters of Rainforest Trust, donating enough money from our sales to save between 500,000 –

750,000 trees from deforestation. We have also partnered with Ecologi and TreeApp, where we are planting trees and sequestering CO2 emissions through various projects all over the globe.

I feel this new way (printing books once actually sold, whether direct or to retailers) is a new way of operating. Yes, it may cost us more to print only hundreds of copies, rather than hundreds of thousands, but we'd rather do this than add to the already colossal waste from the book publishing industry. The projects we support (tree planting and removing CO2) are all Gold Standard projects that

have been verified again and again. We're proud of our climate positive status, but we know we can also do so much more.

TRIME UK

THE TRIME X-SOLAR HYBRID LIGHTING TOWER

AIM

To ensure that a construction site or outside event can function correctly and safely when natural light is not available, such as overnight working or on festival campsites, it is paramount that the area has access to artificial lighting. Bright, safe lighting levels are essential for a variety of purposes; illuminating specific sections or for lighting up entrances and exits, whilst also enhancing security.

Most traditional site lighting is delivered via a diesel-fuelled engine. With site managers and event organisers working hard to reduce their fossil-fuel emissions, Trime began this project with the aim of developing a lighting tower that was powered from a combination of solar, battery, and a small diesel engine as a back-up.

In consultation with some of the UK's leading rental firms, the Trime design team built the X-Solar Hybrid lighting tower that reduces carbon emissions, lowers fuel costs, lessens noise pollution, but nevertheless produces safe lighting levels.

To complement the X-Solar Hybrid's energy-saving attributes, Trime also decided to use Light Emitting Diode (LED) lamps as standard. When compared against Metal Halide, LED lamps last longer, possibly up to 100,000 hours or more, and require less power to operate.

ACHIEVEMENTS

Following real-time field tests, Trime engineers analysed and recorded the X-Solar Hybrids' performance. When compared to a traditional diesel-fuelled Metal Halide lighting tower the following achievements were demonstrated:

1. The X-Solar Hybrid's CO2 emissions were

0.17kg month, 86% lower than a Metal Halide lighting tower

2. Its' fuel costs were just £5.00 per month, 99% lower than a Metal Halide lighting tower
3. Its fuel usage was just 10 litres of fuel per hour, a 94% lower than a Metal Halide lighting tower

One other environmental benefit of the X-Solar Hybrid was its' silent running time (x cycle) of 70 hours, resulting in minimal noise pollution and because the engine is only in operation infrequently, service costs are negligible.



For optimal performance, the X-Solar Hybrid batteries can be recharged in just 15 hours and the overall running time between refuelling came out at 3000 hours. These means less fuel needed to be stored on-site, which in turn helps to limit any ground contamination when the lighting tower is being refuelled.

The X-Solar Hybrid is a sustainable, robust lighting tower for use in most situations that require safe, low-cost, near emission-free, bright lighting.

IN DETAIL

“Environmental considerations are the basis of our product development,” states Paul Hay, managing director of the lighting tower manufacturer, Trime UK, “and this is aptly demonstrated in our new innovation, the X-Solar Hybrid,” added Paul.

Construction site lighting requirements as set out by the UK Health and Safety at Work Act of 1974 which states that; ‘every part of the construction site that is in use should be well-lit, either with natural light or artificial lighting. This ensures that wherever people are working, they are able to do their work effectively and move around the site safely and efficiently. If work needs to carry on beyond daylight hours, or the building structure is enclosed, artificial lighting must be used.’

In addition, with an increasing propensity to complete highway working during the night, having access to artificial lighting levels is now a prerequisite.

Artificial lighting is also important for outside events to control entrances and exits, campsites, and car parks.

Most lighting towers are powered by a diesel engine; however, here are three sound reasons why a site manager should be looking towards using renewables to provide the power to light their sites.

1. Statistics show that construction sites are responsible for 7.5% of nitrogen oxide pollution, 8% of large particle pollution (PM10), and 14.5% of the most dangerous of small particle pollutions (PM2.5), with the culprits being diggers, generators and other machinery used on sites.
2. From April 2022, red diesel will be available only to agriculture and the rail sector. Users of non-road machinery will have to pay extra per litre for their diesel, paying the standard tax rate of 57.95 pence per litre rather than the subsidised red diesel rate of 11.14 pence per litre. This will affect both construction and event organisations.
3. London Low Emission Zone (LEZ) is now in force and there are important upcoming



changes to the NRMM (non-road mobile machinery) requirements for diesel engines on sites in London. On 1st January 2020 all constant-speed engines, such as those typically found in generators, are required to be at Emissions Stage V throughout London. Both Birmingham and Leeds soon to bring in similar Zones. Although not yet covered by the ULEZ, other construction equipment will face its own challenges from January 2020 when the Low Emission Zone for Non-Road Mobile Machinery (NRMM) tightens its regulations.

The Trime Group is an innovative company with an emphasis on building lighting towers that reduce carbon emissions, lower noise pollution, and bring genuine cost savings to the operator. The Trime X-Solar Hybrid lighting tower has all of these attributes, whilst still delivering bright, safe lighting levels.

The Trime X-Solar Hybrid is a LED lighting tower that is powered by a combination of solar energy, battery power, backed-up by an engine-driven battery charging system to ensure continual illumination.

The set features 4 no. 100watt LED lamps that deliver a light coverage of 2400 square metres, combined with up to 3000 hours of uninterrupted running without refuelling. For 95% of its operation, the X-Solar Hybrid emits zero noise along with 97% zero emissions.

Trime engineers have calculated that the X-Solar Hybrid will bring significant cost savings and environmental gains when compared to a standard lighting tower.

As the Trime lighting set only uses £5.00 worth of fuel per month, an operator's diesel costs could diminish by a staggering £457.00 per month.

Air Pollution will reduce dramatically, with CO2 emissions being brought down from a standard lighting tower' monthly 1224 kg to the X-Solar Hybrids' 36kg. This will result in a highly significant reduction in the harmful venting of CO2 by 1188 kg per month.

The vastly reduced function of a diesel engine means that the machine will require its first service at 3000 hours, as this includes 500 hours of engine run time; hence no servicing costs for a minimum of



twelve months. The energy-saving LED lamps have a guaranteed lifetime of up to 2000 hours.

Noise sensitive areas will profit from the X-Solar Hybrid as it emits zero noise for 95% of its operation and, in contrast to metal halide bulbs that need an annoyingly long time to warm up, LED lamps bring about instant light.

Safety is heightened by the AMOSS safety system, which automatically lowers the mast if the lighting set is moved whilst the mast is still erected. Unlike many lighting towers on the market, this device is included as standard on the Trime X-Solar Hybrid machine.

The compact dimension of the X-Solar Hybrid means that four units can be loaded onto one single truck which helps to reduce the amount of traffic onto a site.

Trime has on offer some optional features for the X-Solar Hybrid including; a telemetry system for remote location and operational monitoring, an automatic start-up PIR operation, and handy dimmable lighting.

The Trime X-Solar Hybrid lighting tower can be used in most locations including; rail, airports, construction sites, highways, events, mines, quarries, special events, film/TV sets and military applications, in fact just about anywhere where sustainable lighting is needed.

The X-Solar Hybrid is one of a range of five 'Green Line' lighting sets manufactured by Trime. The company has advanced plans to expand this range.

The Trime Group has rapidly developed into the market leader in the supply of engine powered LED lighting sets. The Trime team collectively encompasses over 50 years of experience in developing and marketing environmentally sustainable lighting sets for worldwide markets.

The Trime Group manufacturing plant is based near Milan in Italy and Trime UK Limited is situated in Huntingdon, Cambridgeshire.

The X-Solar Hybrid project was fully funded by the Trime group's own innovation budget and was supported by the complete Trime team based in the UK and in Italy.

TOUCHWOOD-SOLIHULL

INDUSTRY LEADING ACCREDITATIONS AT TOUCHWOOD

AIM

Touchwood endeavour to connect urban and natural environments to support community and environmental health and wellbeing. We are focused on creating places that foster physical and mental wellbeing, and slow down or prevent environmental degradation.

We aim to achieve this by committing to best practise environmental management systems. Our aim was to secure accreditation to the leading standards for energy, environmental and health and wellbeing.

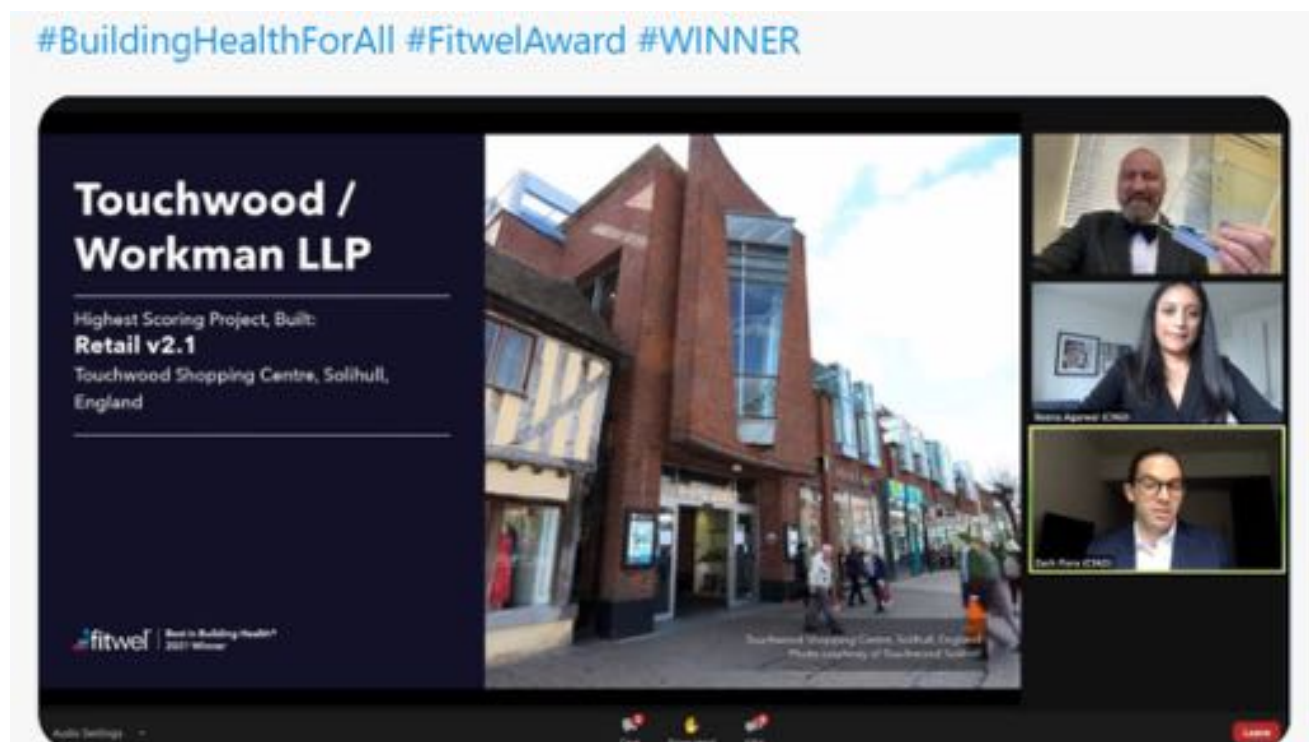
To further support our make significant ongoing utility, waste and CO₂e savings and building better health for all staff and visitors. during the project and continually explore and deliver future efficiencies and sustainable spaces using the framework of these leading standards.

ACHIEVEMENTS

Accreditation to ISO 14001:2015 & ISO 50001:2018 and becoming the first Shopping Centre in the UK awarded a 2-star Fitwel accreditation.

Went onto being recognised by the Fitwel Active Design team as a recipient of the Best in Building Health Award 2021. • 53% reduction on GHG Emissions (kg CO₂) equivalent in 2019 versus 2014 baseline

- 59% reduction on GHG Emissions (kg CO₂) equivalent in 2020 versus 2014 baseline
- 20% reduction on Total Energy in 2019 versus 2014 baseline
- 33% reduction on Total Energy in 2020 versus 2014 baseline
- 28% reduction on Water in 2019 versus 2014 baseline



- 57% reduction on Water in 2020 versus 2014 baseline
- 38% to 97% on waste recycled in 2019 on baseline
- 38% to 95% on waste recycling in 2020 on baseline.

IN DETAIL

What Did the Project Involve Doing?

Touchwood Shopping Centre is a premium shopping centre located in the heart of Solihull, well established at almost 20 years old and has an excellent reputation. The centre comprises over 80 stores, 25 restaurant/eateries and a 9-screen cinema as well as offering 1,700 car parking spaces.

Sustainability has always been at the forefront for Touchwood since conception right through to its current daily operations. Conceived by Eric Kuhne, the centre's style is heavily influenced by English culture, local folklore, Solihull heritage and most importantly sustainability by design.

Lead by an appointed Sustainability Leadership team Touchwood has an exemplary track record in Energy Management being the first Shopping Centre awarded ISO 50001:2011 in 2017 and in pursuit of continual improvement and commitments to operate

to best practise environmental management systems and build on the so a decision was made to develop a formal management system to the framework of ISO 14001 & ISO 50001 and become the first shopping in the UK to be awarded certification to Fitwel.

In early 2020 Touchwood were awarded a Certificate of Conformity to ISO 14001:2015 and in mid-2020 put the wheels in motion to integrate its ISO 14001:2015 & ISO 50001:2011 Environmental and Energy Management Systems in line with the latest ISO 50001:2018 standard. Exercises were completed to agree the context of the organisation by identifying internal and external issues and environmental conditions and the needs and expectations of all interested parties.

Touchwood's General Manager led the way by developing and sharing Environmental and Energy Policies to all internal personnel and externally via Touchwood's website. Organisational roles and responsibilities were reviewed and redefined to ensure the required competencies were achieved and consultation took place to ensure adequate resources were made available.

Touchwood's Projects and Compliance Manager developed an aspects and compliance risk and opportunities matrix considering the context of organisation exercises, evaluated compliance and produced and shared action plans to ensure

| | 2020 V 2014 baseline | 2020 V 2015 baseline | 2019 V 2014 baseline | 2019 V 2015 baseline |
|--|-------------------------|-------------------------|-------------------------|-------------------------|
| GHG Emissions (kg CO2) equivalent | -59% | -60 | -53 | -54 |
| Total Energy | -33% | -34% | -20 | -18 |
| Water | -57% | -54% | -28 | -23 |
| Waste Recycled | From 38% to 95% | From 28% to 95% | From 38% to 97% | From 28% to 97% |

desired outcomes were met, continual improvement achieved and there were no undesired effects. Utilising the Building Services Manager knowledge of the site assets the Projects and Compliance Manager reviewed and captured all site energy sources, uses and significant energy uses.

No changes were made to the baseline year of 2014 due to availability of comprehensive utility and waste data. Performance indicators were enhanced to include for monitoring of KgCO₂e. Smart objectives were set relevant to the context of the organisation and plans to achieve them through the already established Sustainability forum. Touchwood's Property Manager headed up the Operational Control and Emergency Preparedness & Response elements of the management systems working in partnership with the Operations Manager and formalised procedures for Procurement & Design, Waste Management & Recycling, Energy & Air Conditioning, Water Management, Fit Outs, Contractor Management and Emergency Preparedness & Response.

In February 2021 Touchwood successfully completed a 2-day external certifying body audit of its management systems to assess whether we could move onto the stage 2 audits. In May 2021 Touchwood received an accreditation to ISO 14001:2015 & ISO 50001:2018 receiving zero non-conformances which was unprecedented at stage 2 status.

Why Did You Do It?

Touchwood understands sustainability is imperative for economic growth, providing vibrant and resilient communities and cities and maintaining a healthy planet and people. Working in partnership with all interested parties Touchwood's environmental focus is on responsible management of all its resources and materials, climate action, protecting nature and pollution prevention.

On a social level Touchwood aims to create a welcoming and diverse marketplace valued by those

who shop, work and visit as well as contributing to the wider community.

What Did It Cost & Where Did the Money Come From?

Costs isolated to external auditing charges financed by Touchwood's Asset Managers. All other costs were included within the procurement of Touchwood's Facilities Provider.

Who And What Benefited?

Savings achieved to date compared against baseline;

- 53% reduction on GHG Emissions (kg CO₂) in 2019
- 59% reduction on GHG Emissions (kg CO₂) in 2019
- 20% reduction on Total Energy in 2019
- 33% reduction on Total Energy in 2020
- 28% reduction on Water in 2019
- 57% reduction on Water in 2020
- 38% to 97% on waste recycled in 2019
- 38% to 95% on waste recycling in 2020.

Longer Term Benefits?

The savings so far on utilities, waste management and reduction in chemicals benefits both our carbon footprint and operational costs. The savings in our operational costs are passed onto our tenants through production of competitive service charges which in turn support their own environmental pursuits.

Was There Anything Innovative About the Project

Sustainable procurement is ongoing seeing the acquisition of an innovative cleaning machine. Touchwood now uses electrically charged water for cleaning to reduce the use of chemicals and benefit the environment.

The Lotus Pro system was easy to install and use. It kills 99% of all bacteria, reduces plastic waste, safer to use for our cleaning operatives, reduces deliveries to site and converts back to CO2 so it can be simply poured away.

Can Other Organisations/Communities Benefit From Implementing Your Methods?

Further sustainable improvements have included installation of 8 additional charging points within our car parks free of use for all Touchwood staff and visitors, the introduction of a quarterly environmental bulletin sharing environmental performance, best practice, tips, incentives and guidance with our staff and retailers to engage and encourage savings in Touchwood's carbon footprint.

An incentive scheme is in place offering a £50 Touchwood gift card to the staff or retailer who puts forward the 'Best Energy Initiative'. In late 2019 Touchwood embarked on a pilot certification scheme. Known as Fitwel, it looks to assess the health and wellbeing performance of the shopping centre.

Touchwood was one of the first retail centres in the UK to be assessed against this certification tool. With everything from bike storage to stairwell design being assessed the initial pilot phase of the study has focused on the management suite and communal areas of the mall space.

In January 2021 Touchwood received a 2-star fitwel accreditation and were recipients of a 'Best in Building Health 2021' award being the highest scoring retailer.

What Did You Learn From the Project and are You Planning Any Further Development?

Operating to these leading standards has built on the fantastic work done to date, captured all environmental aspects and allowed Touchwood to see where we are doing a great job already and

where we need focus our attentions to achieve continual improvement.

Our future plans include solar, working in conjunction with Love Solihull to improve our green infrastructure, boiler load optimisation and variable speed drives.

TRT INNOVATION

TRT INNOVATION PILOT PLANT SYSTEM

AIM

TRT Innovation aimed to help NI Water to revolutionise the analysis of myriad water treatment processes and determine the most sustainable treatment options through the development of a pioneering pilot plant.

The Pilot Plant is an innovative mobile testing facility developed by Trevor Cousins, Water Efficiency and Innovation Manager at NIW, working in partnership with TRT Innovation, Lowry Building & Civil Engineering (LBCE), Clinty Chemicals and RPS.

Traditionally, water process analysis is carried out using jar testing. This approach doesn't take into account the constant changes in natural organic matter within the raw water and only provides a

snapshot of the full treatment process at a given time.

The Pilot Plant offers a robust, all-inclusive testing platform, specially designed to replicate the water process at any NIW site. It works offline, without affecting the water treatment process, and allows the rigorous testing of myriad carbon-based products, resins and coagulants simultaneously - using the same raw water source - to reduce Trihalomethanes (THMs) and pesticides (MCPA). Through real-time data collection and analysis, NIW can measure how effective and sustainable each process is before considering it as a permanent solution.

The entire plant can be relocated anywhere with only set-up costs incurred at each site.



ACHIEVEMENTS

The Pilot Plant was established at Derg Water Treatment Works (WTW) in September 2020 to investigate potential treatment processes to address MCPA and THM compliance issues.

Through real-time analysis, the TRT Innovation Pilot Plant was instrumental in identifying the most effective solution at Derg to maintain Drinking Water Inspectorate (DWI) and NIW Asset Standard compliance. In addition, it informed the design of the multi-million-pound capital works project at the WTW and allowed the design/contract team to hit the ground running.

The robust results achieved at Derg have demonstrated the economic, environmental and operational benefits of adopting this innovative Pilot Plant technology.

a 24/7 basis to determine the most cost-effective, sustainable solutions.

The Pilot Plant recently scooped first place in the IoW NI Innovation Awards 2020 and is now a finalist in the UK-wide IoW Innovation Awards.

IN DETAIL

What Did the Project Involve Doing?

The TRT Innovation Pilot Plant encompasses a number of mobile units to replicate the entire water treatment process – using the exact raw water source – at any NIW site. The on-site system incorporates scientific facilities to allow the simultaneous testing of numerous processes as well as the collection and analysis of real-time data so that the most accurate results can be obtained.



The Pilot Plant was initially established by TRT Innovation, NIW, RPS, LBCE and Clinty Chemicals at Derg WTW in September 2020 to investigate potential process changes/ product additions to address MCPA and THM compliance issues. Utilising the team's extensive knowledge, an offline Pilot Plant was designed, constructed and commissioned within one month to collect real-time data with no interference to the existing WTW process.

One of the key aims of the Pilot Plant is to provide a sustainable testing facility and its forward-thinking modular design means that it can be easily adapted for any NI Water site.

In early 2021 the Pilot Plant was moved to Ballinrees WTW and enhanced with the addition of automated testing. This has allowed NIW to carry out in-depth analysis of myriad treatment processes on

The clever modular design allows users to examine water quality and compliance issues and research the best possible solutions in economic, environmental and engineering terms.

Why Did You Do It?

Selecting a permanent treatment process to achieve sustainable improvements in water quality, and

marrying that with the most economical viable solution, is a priority for users and the Pilot Plant makes this possible.

Traditional process testing is carried out by jar tests using small amounts of water. This only gives a snapshot at any one time and doesn't take into account the constant changes in natural organic matter within the raw water. The TRT Innovation Pilot Plant was developed to optimise new products that can be used to reduce THMs and problematic pesticides (MCPA). This innovative approach requires 40% less chemical in the testing process, significantly reducing the amount of waste produced. It also allows users to identify the most sustainable products that can be incorporated into the overall treatment process to reduce chemical usage, reduce waste and in some cases promote chemical-free treatment.

At Derg the Pilot Plant incorporated the testing of five different processes running simultaneously off the one raw water source to determine the potential of innovation, sustainability and efficiency.

What Did It Cost and Where Did the Money Come From?

NIW partnered with Clinty Chemicals to bring innovative products and equipment to the TRT Innovation Pilot Plant system. The total cost was circa £500,000 and came from NIW's innovation budget.

If Quantifiable, What Did the Project Achieve in Terms of Sustainable Development, Economy, Environment and/or Equity? Who and What Benefited?

The Derg Pilot Plant has been fundamental in progressing the best overall solution for the capital



works upgrade at the WTW i.e. the accuracy of the data identified that the initial six clarifier design could be reduced to four, reducing budget and programme.

The Pilot Plant is equipped to identify the optimum chemical dosages required to achieve the required water quality output at each treatment works. This promotes a more sustainable approach and ensures that there is no wastage in the treatment process.



By utilising accurate, real-time data, users can be confident that the most effective and efficient treatment process is being applied; while the customer can be assured that they are getting a high-quality product with value for money to the public purse.

Longer Term Benefits?

The use of this Pilot Plant at other sites will provide even more important data that will help shape the design of sustainable treatment processes and associated construction methods in the future.

Was There Anything Innovative About the Project?

The Pilot Plant is unique in that it allows testing of innovative/new process and products at the front end of the treatment process using different carbon-based products. The design of the Pilot Plant can also examine different quantities and volume of tanks and can accurately test the real-time, live data from each particular site and scenario.

This data can then be effectively used to ensure the design/contract team deliver the most efficient permanent solution for specific treatment works.

The clever modular design means that it can be adapted for any site or process. At Derg WTW the

process containers were spread across a large site on ground level, whereas when relocated to Ballinrees, the containers were stacked and configured within a very confined space.

As a further innovation and to improve the research, the Pilot Plant is now smartly automated with probes taking readings at 5 second intervals. This has vastly reduced labour, with sampling no longer required manually every 20 minutes.

Can Other Organisations/Communities Benefit From Implementing Your Methods?

Other water companies could easily replicate this innovative idea and implement a simple Pilot Plant format to test potential solutions before committing to construction. NIW has been liaising with water companies across the UK to share experiences and lessons learnt from their Pilot Plant installations.

What Did You Learn From the Project and are You Planning Any Further Development?

The pilot plant system was first used at Derg WTW to determine treatment on the incoming water source consisting of problematic dual river sources. This site had a DWI enforcement notice for pesticide compliance and THM exceedances. The Pilot Plant tested five processes, across seasonal changes, with an outcome that informed the optimum solution. To build on this instrumental knowledge two further pilot plants have been commissioned to establish the correct TOTEX solutions taking into account new innovation.



TURKISH AEROSPACE INDUSTRY

ZERO WASTE MANAGEMENT SYSTEM & GREEN FLAG LEAGUE

AIM

Zero Waste Management System & Green Flag League

Turkish Aerospace (TA), which ranks among the top hundred global players in aerospace and defense arena with its 9.476 employees, is one of the biggest companies in Turkey, manufacturing aircrafts, helicopters, satellites, UAVs etc.

In order to increase environmental awareness rate and decrease waste formation in TA, we prepared and completed a comprehensive project, which includes two stages:

- “Zero Waste Management System” in TA
- “Green Flag League” Event

1) Turkish Aerospace (TA) Waste Management System:

Our company started to apply the Zero Waste Management system in March 2019. 230 people are involved in.

4.326 new and colored waste bins were distributed to factory and wastes were collected separately. Recoverable wastes were sold, recoverable wastes were used for energy. Organic wastes are evaluated in pet shelter inside TA campus for feeding the animals. The remaining amount are used for compost.

In 2019, totally 6.876 man/hours of training were provided in TA. In 2020, 3.562 man/hours of training were given within 6 months.

Waste reduction activities:

- Stopping the use of disposable cardboard cups (Monthly 350.000).
- Banning disposable plastic materials.
- Decreasing printout amounts.
- Reusing of scrap materials
- Reduction of carbon emission rate (%44)

In 2019; %99 of produced waste is recycled & recovered.

2) “Green Flag League”



To increase awareness rate and decrease waste-forming amount our competition, which has started as of June 5, 2020 World Environment Day, will continue in quarterly periods for a year. A Green Flag Certificate will be given to our three Directorates with the highest score in each period. All the directorates will be shown in a standing. This standing will be posted from TA website throughout the year. Directorates will be competing according to 8 Environmental Evaluation Criteria.

IN DETAIL

COMPANY PROFILE:

Turkish Aircraft Industries Corporation (TA) was established on June 28, 1973 under the auspices of the Ministry of Industry and Technology in order to reduce the foreign dependency in defense industry of Turkey.

TA was restructured in the year 2005, just before the 25 years of period came to an end, with the acquisition of foreign shares by Turkish shareholders. Along with this restructuring, Turkish Aircraft Industries and TAI have merged under the roof of Turkish Aerospace Industries, Inc. and have broadened its activities.

In 2018, Turkish Aerospace got a fresh look with its new logo and identity.

Turkish Aerospace has become Turkey's center of technology in design, development, modernization, manufacturing, integration and life cycle support of integrated aerospace systems, from fixed and rotary wing air platforms to UAVs and satellites.

Turkish Aerospace (TA), which ranks among the top hundred global players in aerospace and defense arena with its 9.476 employees, is one of the biggest companies in Turkey, manufacturing aircrafts, helicopters, satellites, UAVs etc. Turkish Aircraft Industries Corporation was established on June 28,

1973 under the auspices of the Ministry of Industry and Technology in order to reduce the foreign dependency in defense industry of Turkey.

TA has also solid environmental policies and innovative environmental approaches, especially on zero waste management systems.

OUR ENVIRONMENTAL POLICY:

To meet or exceed the standards of excellence in compliance with statutory and regulatory requirements to assure the stakeholder satisfaction through first time quality and continual improvement.”

To continually improve safety performance by managing aviation safety risks together with all stakeholders in just culture environment complying with statutory and regulatory requirements

PROJECT DETAIL:

Our application has two stages:

“Zero Waste Management System” in TA

“Green Flag League” Event as Innovation Project for Environmental Awareness and Waste Minimization

1) Turkish Aerospace (TA) Waste Management System:



Our company started to apply the Zero Waste Management system in March 2019 with its high awareness and responsibility in the field of environment, before its legal obligation has started in Turkey. At Turkish Aerospace Industry (TA), 54% of our wastes are hazardous and 46% are non-hazardous wastes.

Within the scope of the Zero Waste project, there are colored and defined waste containers for hazardous and non-hazardous wastes in office and factory operation areas at TA. Wastes collected separately from these areas are transported to temporary waste storage areas. Collected wastes are stored and recorded separately in the temporary storage area according to waste types. Environmental management department is responsible for zero waste management in our company. A team of 230 people are involved in zero waste management.

NON-HAZARDOUS WASTE MANAGEMENT:

In our company, hazardous and non-hazardous wastes are generated from offices, production and assembly areas, kitchens, cafeterias & halls, social buildings and health centers etc. All these wastes are collected separately at their source.

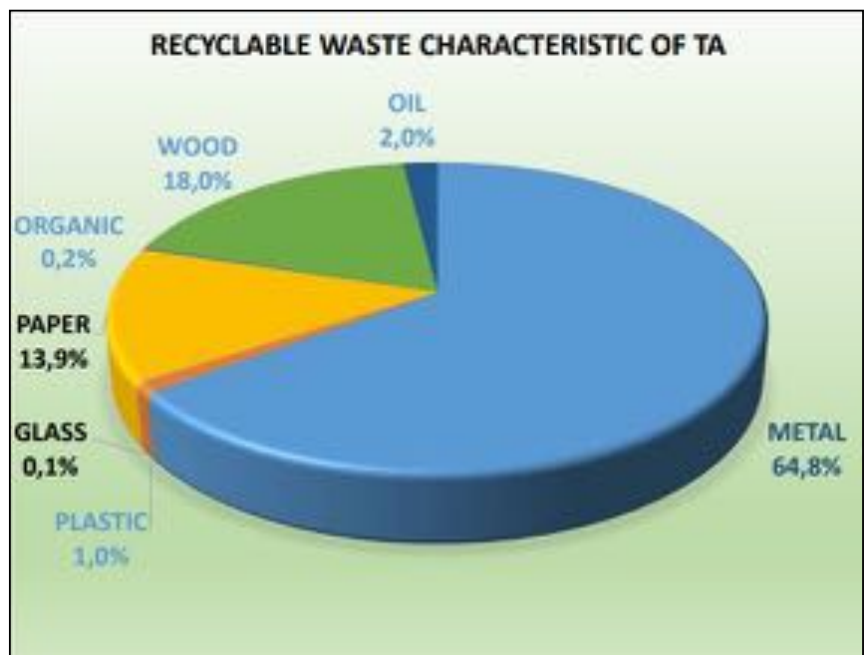
In the scope of our zero waste management system;

- Waste Buckets were reorganized and table trash cans were removed
- In the offices, waste collection points were created at 400 points with 60 liter-capacity waste bins. Total number of 60-liter capacity waste bins is 3.426.
- In the factory area (production line), waste collection points were created at 150 points with

6 x 120 liter-capacity waste bins at each point (totally 900 waste bins).

- Colored Recycled Plastic Bags are used according to the zero waste color scale in order to collect the wastes separately at the source.
- By these different colored bags, wastes are easily separated according to their types in temporary storage areas (These bags were manufactured from recycled plastics).
- Temporary waste storage areas were created at 10 points. Non-hazardous wastes collected from the areas are brought to temporary waste storage areas.
- The recyclable wastes resulting from the production lines like aluminum, iron, titanium parts, other kind of metals, paper, cardboard, glass, plastic and wooden materials etc. at the temporary storage area are sent to recycling companies with zero waste principle.

In our company, organic wastes from food courts are evaluated in pet shelter inside TA campus for feeding the animals. The remaining amount of organic wastes are given to the Municipality to produce compost.



Training activities were also carried out within the scope of the Zero Waste Project.

In 2019, totally 6.876 man/hours of training on Environmental Awareness and zero Waste practices were provided in TA. In 2020, most of the educations turned to e-learning online lectures because of the pandemic. In 2020, 3.562 man/hours of training on waste management systems were given within 6 months. All employees have to take environmental educations on each year.

Within the scope of zero waste management, waste reduction practices are also carried out in TA.

- The amount of non-recyclable waste was reduced by stopping the use of disposable cardboard cups. Monthly 350.000 pieces of disposable cardboard cups were used in TA. Now employees are using glass cups.
- Metal and porcelain materials have been used instead of disposable plastic spoons and bowls in the cafeteria.
- All internal announcements are made via e-mail and SMS systems instead of printouts in order to reduce paper use.
- Products made from recycled paper are preferred for the memo-books which are distributed to employees.
- “Wooden Cafe” was built in the social facility area using waste scrap woods and metal materials. The cafe consists of wooden cladding on steel profiles, 100 m² closed and 400 m² open area. Only scrap materials were used for construction. The cafe is now being used by employees and their families in TA.
- Park seating groups, tables and chairs, flower beds etc. manufactured from waste scrap wooden and metal materials in the junkyard.

In addition, TA has decreased its carbon emission rate by %44 as a result of reduction in fossil fuels and producing energy from natural gas at

cogeneration plant in TA. In 2015, total carbon emission amount was 45.985 tCO₂e and total workload was 8.719.394 man/hour. In 2019 total workload was nearly doubled, 14.869.091 man/hour, however total carbon emission decreased as 43.805 tCO₂e. When compared with 2015, total emission rate is decreased as %44.

In order to ensure waste reduction and to use resources efficiently, all departments set annual Environmental Goals for waste reduction and make yearly action plans to achieve their goals. Environmental Management Department follows the progress.

HAZARDOUS WASTE MANAGEMENT:

Hazardous waste types of TA as follows:

Paint, Varnish, Adhesive, Chemicals, Contaminated Filters, Pills, Paint Sludge, Wastewater Sludge, Oils, Lamps, Condenser, Contaminated Packages, Pressure vessels, Battery, Cartridge toner waste

Hazardous wastes are collected separately at the source. 90 hazardous waste collection points formed in TA. Each waste has its own code and waste bin.

Hazardous waste is sent to the temporary hazardous waste storage area. Hazardous wastes are classified according to their types by specially trained technical staff.

These wastes are then transported by licensed hazardous waste transport companies and sent to licensed disposal facilities.

Energy recovery is achieved by burning hazardous wastes at disposal facilities.

All the hazardous and non-hazardous management system is carried out by a specially designed software in TA.

OUTCOMES AND BENEFITS OF THE PROJECT:

In 2019;

7.475 tons of waste is produced. Recycle rate is %59 (4397 tons), Energy Recovery Rate is %40 (3016 tons). Totally %99 of produced waste is recycled & recovered. Only %1 of total waste (62 tons) is sent to the Municipality disposal area as non-recyclable wastes.

Total revenue from recycling of wastes is 2,2 million \$.

In 2019

- 611 tons of Paper Waste
- 2.847 tons of metal waste
- 44 tons of plastic waste
- 6 tons of glass waste are recycled in TA.

As a result of recovery works;

- 10.386 trees saved from cutting
- 380.607 kg greenhouse gas prevented (against global warming)
- 4,6 million kwh energy saved
- 10.179 meter cube storage areas gained from disposal areas
- By recycling of plastic wastes, 713 barrels of oil saved.



- The carbon footprint of ta is reduced as 44% by the reduction of fossil fuels in heat generation process.
- The effluent treated water of the wastewater treatment plant in TA is used for the irrigation of the green areas in the campus.
- In 2019, the number of planted trees in Turkish Aerospace is 10.000

In the scope of “Zero Waste Regulation”, The Ministry of Environment and Urbanization has started to give “Zero Waste Certification” to all sectors according to their success in waste management systems from January, 2020. TA is the first company which has gained this certification among all industrial companies in Turkey.

Environmental awareness rate of the employees is followed by surveys in TA. According to the results of the survey, a detailed analysis is done by environmental management department and

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|-------------------------------------|-----------|-----------|------------|------------|------------|
| Total Emission tCO2e | 45.985 | 49.005 | 51.873 | 33.870 | 43.805 |
| Total Workload man/hour | 8.719.394 | 9.601.710 | 10.475.922 | 12.664.383 | 14.869.091 |
| Rate of Emission to Workload | 0,005274 | 0,005104 | 0,004952 | 0,002674 | 0,002946 |
| Reduction in Carbon c/w 2015 | | 3% | 6% | 49% | 44% |

necessary actions are prepared. In 2019, the environmental awareness rate was %75 according to the surveys. In June 2020, the awareness rate increased up to %87 as a result of the recent survey.

2) “Green Flag League” Event as Innovation Project

We are applying a strong waste management system in TA. By aiming higher at our Zero waste goals, we are performing new projects in order to increase Environmental Awareness and Waste Management Systems.

In order to increase more the environmental awareness rate and decrease waste formation, we have started a new project as “Green Flag League”. The aim of this project is increasing our environmental awareness rate and decrease waste-forming amount by an enjoyable competition. Our competition, which has started as of June 5, 2020 World Environment Day, will continue in quarterly periods for a year. A Green Flag Certificate will be given to our three Directorates with the highest score in each period. The points collected by all our directorates will be constantly published in our Green Flag League. At the end of the year, a great award will be given to the first rank in total points.

Totally 143 Directorates with its 9.476 employee will be competing in TA according to following Evaluation Criteria:

- 1) Attendance to Environmental Surveys: Rate of total employee number of the department to number of employee attending to environmental surveys for each directorate.
- 2) Awareness in Environmental Surveys: Rate of right answers in Environmental Surveys for each directorate.
- 3) Participation to Environmental Educations: Rate of attendance to the environmental educations and trainings for each directorate.
- 4) Reduction in Paper Waste Amount: Total Decrease Rate in Printouts for each directorate
- 5) Number of Environmental Suggestions: Total number of environmental suggestions coming from the employee for improving environmental level
- 6) Environmental Targets Achievement Rate: Rate of achievement for the environmental targets and goals of each directorate.
- 7) Environmental Audits Compliance Rate: The compliance and success rate of each directorate according to the environmental audits carried out in each 3 months in a year.
- 8) Non-Occurrence of Environmental Accidents: Non-occurrence rate of environmental accidents as a result of successful precautions and environmental risk analysis.

All the directorates will be shown in a standing. This standing will be posted from TA website throughout the year. At the end of each quarter, a certificate and green flag will be given to the winners. At the end of each year, a great prize will be given to YEAR-END CHAMPION. The directorates will be divided into 3 categories based on their total points. The ones in red zone will endeavor to go up by gaining more environmental points. The winners for 2020 first quarter will be announced in August. The project and outcomes were shared via press and social media in order to promote other industries as well as NGO's and public bodies to adopt this project for increase environmental awareness rate and decrease waste formation.

VOLKERFITZPATRICK FELTHAM DEPOT

AIM

Client: South Western Rail Project background & aim:

Enhancement works to Feltham depot is part of South Western Rail (SWR) and Network Rail's Feltham Re-Signaling Scheme and is being built in readiness for the revised SWR train timetable.

The new timetable will see an increase in frequency and metro style operations, as an increase in stabling capacity is required.

The depot works provided:

- new stabling facility for up to ten trains
- 4km of bi-direction (arrival/departure) track
- carriage wash machine
- automatic vehicle inspection system
- accommodation buildings

ACHIEVEMENTS

- Nominated for the Rail Business Awards – Technological Innovation of the Year Category
- Considerate Constructors Scheme score of 45
- Development of innovative app for local Stakeholder engagement
- 68% of waste produced has been reused on site
- Volker challenging the design lead to a reduction in 88 TonneCO2e compared to early design stages
- BREEAM – Design award achieved excellent. Final construction award currently under determination
- 13% Social value add:
 - Large spend with local SME's (within the M25)
 - Local college presentation and carpentry scheme – bench build
 - Use of wood collection recycling scheme



Map 1 - Depot location (highlighted in yellow).

- Feltham food bank Christmas donations
- Positive stakeholder & neighbour relationships
- University site visits
- Department for Transport visits
- Donation of furniture to local families.

IN DETAIL

Early engagement with the client and stakeholders was critical in identifying sustainable opportunities and innovative solutions.

A few solutions to minimizing the project impact on the community are detailed below, minimising the impact was critical for the project's success as the depot is in a highly residential area with multiple schools.

Reducing vehicle movements Reducing vehicle movements in the local area was critical for reducing nuisance and emissions in an area of Air Quality Management (AQMA) whilst considering road safety in an area with several schools.

Vehicle movements reduction was accomplished through two main innovative solutions:

- Reusing materials on site - Reducing financial costs as reusing materials
- Building an additional track to facilitate freight access - Financial cost = material costs, in house expertise.

Helped to accelerate programme.

i. Reusing materials on site to reduce the need for waste movements off site and deliveries of new materials

A stretch target was set early in the project was agreed by the project team & the client, the target was set to decrease the loads needing taking off site and to minimize the need for material deliveries.

- Target: Zero non-hazardous waste sent to

landfill and recycle 90%.

- Outcome: 97% of non-hazardous waste diverted from landfill. With 89% reused (on site (68%) & off site (21%)).

The project did not meet the stretch target but achieved a level up in the waste hierarchy in comparison with the target. 12750 tonnes of soil & stone has been retained on site for landscaping under a Material Management plan.

The retention of arisings on site eliminated the need for 630 vehicular movements equating to a reduction in 19 tonnes of co2 emissions in an AQMA.

ii. Building an additional track to facilitate access freight deliveries and waste removal

An early stage carbon assessment identified opportunities to construct an additional track not included in the original scope, the temporary track is an innovative solution in the industry was built at the beginning of the project to reduce vehicular movement by using it to remove and deliver materials via freight trains. The track led to a reduction in 757 Heavy Good vehicle movements equating to a reduction in 24 tonnes co2 emissions.

The carbon assessment calculated that 88 TonneCO2e was saved upon construction completion compared to predictions in the earlier design stages. This rail line will remain to serve the

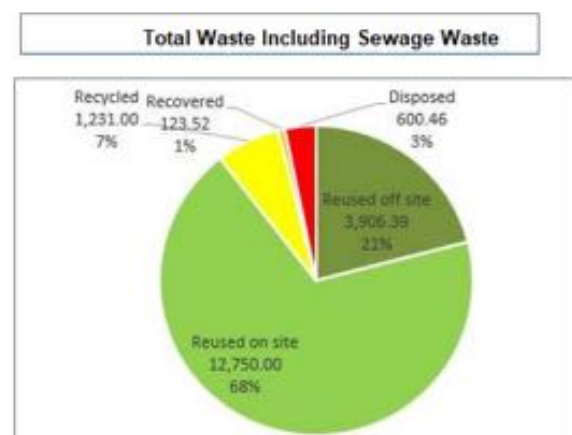


Figure 1 - Final project waste figures

depot in future continuing to perpetuate the benefits within the local area in the future.

Social Value add During the project the team worked closely with the local community to ensure that the project has a positive impact in the local area, a few initiatives will be detailed here. **Community app** The depot team worked with an external developer for six months to build the app which is an innovative step for community engagement.

The app offered the public an overview of the project; details of work activities; project news, and community involvement initiatives and allowed users to submit queries which can be reviewed in real time.

The app cost approximately £10,000 to develop but is an improvement on the traditional letter drops and drop-in sessions leading to a more collaborative relationship with the local community and external stakeholders.

Due to its success the app has now been rolled out onto other Volker projects with differing clients. Furniture donations Working with Su Mano Amiga, a local charity which aims to stop domestic violence in Latin and BAME communities, the team donated several furniture items to families in need.

The team has already helped one family to move into their home and has donated beds, wardrobes, tables, chairs & kitchen appliances that were due to be thrown at the end of the project. Having seen the positive impact this charity has had, the team also made several personal donations, including a 49inch television and food vouchers. **2c. Liaison with local stakeholders**

During the project the team worked closely with the Railway Club, located adjacent to the depot. With a function room for hire and a bar/seating area, the project has used the space for team events, including health and safety events and collaboration days. Most recently, due to Covid-19 and social distancing, the project has hired out the function hall for extra communal space which has allowed the project to support a local business, whilst it was closed in lockdown.

The project has donated a bench built by a local wood recycling charity from redundant timbers originally from the depot. The initiative has minimal cost due to upcycling of the materials and increased charity spend. Both the furniture donations and the bench helps to prolong the projects legacy in the local community.

In total the project created 13% (£4,256,273) of social value add equating to the value seen in figure 4 below, helping to deliver a sustainable project.

Lessons learnt & further development:

- **Implementation of innovative solutions of future projects including:**
 - Community app
 - Upcycled furniture
 - Potential to install tracks for deliveries/removals
 - Early carbon assessments
 - More in-depth engagement with local stakeholders



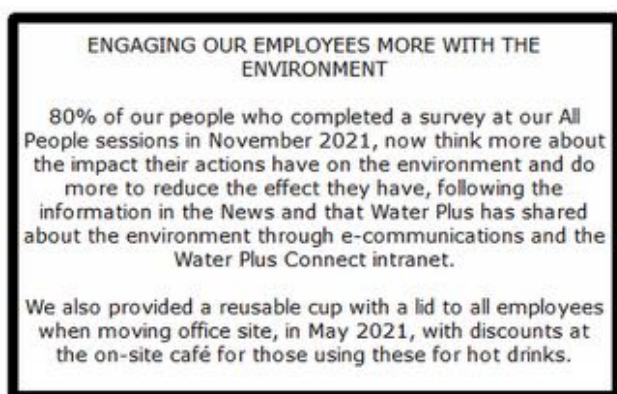
WATER PLUS NET ZERO

AIM

Water is seen as a low priority, at times, by organisations in the UK - but it can be a whizz at helping reduce carbon emissions where it's used more efficiently – and where less hot water is used there's an energy saving too.

Our approach to limit the impact our business – and our customers have – on natural resources and the environment has taken three main approaches, detailed below.

We're encouraging the efficient use of water across the private sector and public sector in England and Scotland – and cutting water waste through our actions, so we can help organisations towards their Net Zero and targets linked to the Sustainable Development Goals.



IN DETAIL

- Helping identify water waste such as leaks and highlighting opportunities to invest in proactive water management measures and monitoring along with water-saving technology.
 - Since the start of January 2019, we have installed more than 1,500 data loggers that provide updates into a smart portal we provide

for customers, with updates every 15 minutes on water use across sites. In the 19/20 year we installed 500 - and in the space of 6 months in 2021 we increased this significantly installing more than 400, with hundreds more ordered (we received an order in 2021 for 300 more data loggers).

This has helped universities and private sector organisations spot issues and opportunities and they have identified the below savings, which have led to action to reduce water waste, overall water use and helped the environment too.

- A large data logger project in 2021 found a site owned by a multi-site distributor had seen a jump up in usage. An extra 1,000 litres was being used over 3 days, in June 2021, due to several toilet leaks - allowing them to react in a 24-hour period, rather than a month later. The water issue was fixed within 24 hours, after this was flagged.
- More examples on how data loggers have helped are published online under the #BeWiseOnWater messaging (2021 award entry article published September 2021).
- Where less hot water is being used, less energy has been used too, which would also lead to reductions in Greenhouse Gas Emissions, unless your power is from 100% certified renewable energy already.
- Less water being supplied through wholesaler networks and less wastewater taken away from sites, also means less carbon created. There are carbon emissions linked to each cubic metre of water supplied to a site and each cubic metre of wastewater taken away (see published Conversion Factors in the UK).
- Our work since 2019 makes us a leading provider of this extra monitoring equipment. And we're also raising awareness with customers and other organisations on the equivalent carbon emissions reduction they will see through water efficiency measures, including regular maintenance of fixtures, fittings and pipes to reduce leaks.



Green World Ambassadors and Green Apple Environment Award winner Water Plus outlines how water can be a whizz to help organisations towards environmental goals.

- Raising awareness amongst organisations about water waste, risks to supply on-site and attitudes to water use amongst employees – and highlighting how to be more sustainable amongst our employees too!

- Commissioned research, published in 2021, to show the impacts water loss and water leaks can have on organisations in the UK.

This followed research we commissioned and published for the Public Sector on attitudes towards water in the workplace. Both of these research pieces were the first of their kind for the business water retail sector.

- We were the only water retailer to join Festival Net Zero in June 2021 to highlight Scope 3 emissions – and the only retailer to be part of the UK's Net Zero Week 2021 and part of messaging linked to the climate conference held in Glasgow in 2021, to help raise

awareness around the importance of water to help organisations go Net Zero.

- Each year we have a refresher course for all employees around sustainability including recycling, managing waste and avoiding unnecessary travel. In 2021 we brought more of this information into our induction process too - so everyone knows what we do as a business to ensure we are protecting the environment - from their first day with us.
- Increasing partnerships with community groups and organisations to reduce environmental



impacts along with supporting tree-planting in the UK – this has included:

- In 2021, partnering with a Scout and Guide group in an area of Stoke-on-Trent, Staffordshire, which is saving water after we provided a 227-litre water butt and flush-savers for their site, along with water-saving tips for Guides and Scouts - and the group's management committee.
- In 2021 we also helped a grass-roots rugby club in Scotland cut its water use, helping install water efficiency devices which cut flow rates. It's seen the club's usual water use drop by around 36% –cutting up to 600 litres on peak use days - from 1.7 cubic metres of water a day to 1.08 cubic metres of water a day. The work with the rugby club also identified a slow trickling leak, losing 12 litres of water an hour, which wouldn't have been visible on just their water bill.

- As our main offices are in Staffordshire, we're also members of Staffordshire Business & Environment Network (Sben) - highlighting information on water use and how increasing efficiency with water and cutting any waste can help towards Net Zero. We're continuing this partnership in 2022 and into 2023.
 - Our new main office site that we moved to in May 2021 is powered by 100% certified renewable electricity, has electric car charging, which our previous main office location didn't have - and is zero waste to landfill. We're also trialling units that create drinking water from the air at the main office, which provides a focal point for employees each day.
 - Our new partnership with Trees for Cities, which started in April 2021, will boost tree-planting in the UK to help, amongst other benefits, manage surface water that can increase flooding. Initially this involved 96 trees, put into the soil in the planting season which ran to March 2022, in Northumberland, England. The trees were to target areas of higher pollution in England. Water efficiency messages were also shared by Trees for Cities as part of the partnership.
 - We also supported The National Trust's Plant a tree fund in 2021, creating 2,023 square metres of woodland and supporting their goal of putting an extra 20 million trees into the soil to help provide spaces for people to enjoy, remove pollutants from the air and provide homes for birds, insects, mammals.
- The above tree-planting will boost green canopy coverage – and is part of supporting UK communities, biodiversity and habitats.
- We also supported the creation of a hectare of new native woodland in 2021, through The Woodland Trust, which will capture around 375 tonnes of CO₂. This followed supporting the planting of 150 trees through the Woodland Trust's Plant a Tree to Save the World campaign in 2020.

- In 2021, Water Plus ranked in the top 50% of companies across the world for its approach around Corporate Social Responsibility (CSR). The EcoVadis sustainability rating looks at the integration of CSR principles in an organisation. This focuses on 21 issues, which are grouped into 4 themes: Environment, Labour Practices & Human Rights, Fair Business Practices, and Sustainable Procurement. 2021 is the third year the water retailer has secured an EcoVadis rating. The EcoVadis Sustainability rating increased in October 2021, placing Water Plus in the top 30% of companies.
- We also partner with universities recognised in environmental league tables for the steps they're taking.



In March 2021 we completely refreshed our Environmental Policy, with more ambition in this area, helping towards improving environmental reporting in our business.

The above is just the start for us. In May 2021 we moved to new offices and we're establishing baselines, so we can continue taking active steps to reduce our impact on the environment further.

There's more on the water and carbon emissions savings seen by organisations in the UK on the Water Plus website: www.water-plus.co.uk/about-us

To partner with Water Plus, email hello@water-plus.co.uk (and mention Green Book in the subject heading).

Waterplus

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WATES FM ENERGY MANAGEMENT SYSTEM

AIM

In November 2020, Wates FM and JLL working on behalf of Royal London embarked upon a pilot energy management project at 45 Church Street in Birmingham.

This pioneering project saw Wates FM invest the profits from its FM contract back into an innovative Energy Management System (EMS) Proof of Concept System with the objective of providing real-time energy consumption data. This data has allowed Wates FM to monitor usage and behaviours to inform energy management, reduce consumption and ultimately generate carbon reduction and cost savings.

Putting forward a business case for the initiative, Wates FM proposed to sponsor the installation and management of the EMS, allowing JLL and Royal London to evaluate the system's energy management potential completely free of charge. Installed by green tech SME, MKL Innovation, this is a non-intrusive plug-and-play system that uses a state-of-the-art technology, providing accurate

real-time metered consumption data and analysis through an IoT platform.

ACHIEVEMENTS

A true test for JLL and Royal London's future energy management and carbon reduction strategies, the EMS has been transformative, providing visibility of energy use to identify and mitigate waste. In February this year, Royal London invested in a new BMS system at 45 Church Street, a change that was immediately evident in data from the EMS. Through its intelligent data monitoring, the EMS was able to demonstrate a 27% reduction in energy use, vital data demonstrating a ROI that would not be available without the EMS.

IN DETAIL

The Business Case As a leading M&E provider, Wates FM is committed to adding value and introducing their clients to new, more progressive and sustainable ways of managing their estates.

In 2020, this saw Wates FM put forward a business case to work collaboratively with JLL and Royal London to install the new EMS to record energy consumption, facilitate more intelligent building use and demonstrate carbon reduction. The business case was developed in partnership with digital FM specialists, MKL Innovation, which became one of Wates' innovation partners through its green tech division, Wates Sustainable Technology Services.



Wates pledged it would invest its contractual profits and sponsor the EMS system for a 12-month trial to demonstrate results to JLL and Royal London.

The Objective With an overall objective to enhance JLL and Royal London's energy management strategies, installation of the EMS was intended to provide real-time consumption data and visibility on energy use to understand and forecast energy costs and carbon emissions to identify and mitigate against inefficiencies.

The EMS was proposed as a means of giving a baseline of what was happening on the 8th floor of 45 Church Street in terms of energy consumption, capturing data from both landlord and tenants' distribution boards.

Recording and analysing energy consumption at circuit level, Wates FM, JLL and Royal London could then work collaboratively to understand usage and behaviours identifying areas for change, promoting increased efficiencies and intelligent engineering, whilst reducing energy usage to achieve carbon reduction and cost savings. The System The EMS Proof of Concept is designed to turn the invisible 'visible', being able to demonstrate exactly where

energy is used so that reductions can be targeted to specific areas.

The EMS provides an energy baseline of what is going on, which then allows for accurate recording of energy reductions. There are many things that can be done to reduce energy consumption but to be the most efficient and add the most value, these decisions must be based on what a building is actually doing. The EMS is able to report separate energy and carbon usage data for each circuit on the landlords and tenant's distribution boards.

The beauty of the system is its adaptability and accessibility; it can be accessed by desktop or through a mobile app. providing detailed reporting and analysis and alerts engineers on site so alarms can be investigated and responded to immediately.

The EMS also offers 8 three-phase metering points with physical connectivity for a variety of wireless IoT devices, including the installation of pipework sensors to take automated tap temperatures and triggering alarms for temperatures that are out of range, enabling intelligent monitoring of water hygiene.



WHITE ROSE CENTRE SUSTAINABLE & GREEN

AIM

White Rose's main project is to become the greenest shopping centre in the UK.

To do this we have reviewed our cleaning best practices. We have changed how we have our food waste recycled, to reduce costs on the contract and to create, develop and maintain a sustainable habitat for the birds, bees and wildlife in a cost effective and efficient way.

In these uncertain times the centre has had to look at reducing costs but maintaining service. To achieve this, the following systems were implemented:

1. To reduce the amount of energy used on site
2. To reduce the water usage on site
3. To reduce fossil fuels used by the cleaning team

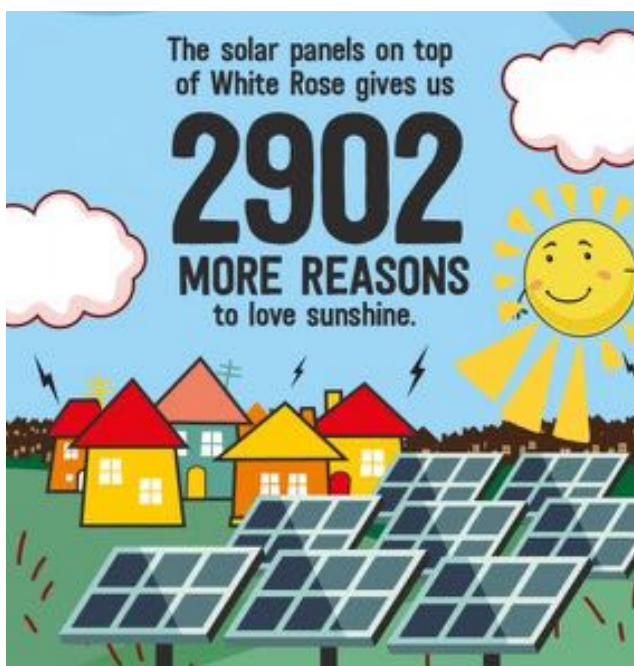
4. Implementation of training programmes to ensure the success of the project and sustainable conformance with environmental legislation.
5. Consider alternative solutions for separating waste streams that may be less expensive than the incumbent processes.
6. Engage and train internal employees and retailers that would be dealing with the waste daily.
7. To create new and develop existing habitats for wildlife on site.
8. To reduce the amount of chemicals used onsite.

ACHIEVEMENTS

The Centre developed partnerships that could help implement the project effectively, delivering reports and showing continuous improvement within the centre.

It was important that as well as introducing environmental improvements, we also needed to incorporate legislative and compliance requirements. Our waste streams are very carefully monitored by staff, all bins are colour coded and clearly labelled. Training documents, posters and sessions are given to our retail partners so that staff can follow a visual guide.

When searching for new floor cleaning machines and technologies we found that with a change of floor pad and the ec-H2O technology we could eliminate chemicals from the floor cleaning process and not only maintain the floors but improve the safety of them. We are constantly working with our partners to maintain the 76 acre site, our hedgerows, water



features that home King Fishers, woodland walk and animal habitats (bats, bees, bugs and hedgehogs)

The Centre uses a rainwater recycling system giving us 40,000 free flushes per year and 2902 solar panels that can generate power for 200 homes for a year and our beehives on the centres roof pollinating local agriculture and providing honey for our charity partners.



IN DETAIL

The White Rose Centre is an out-of-town destination for retail, dining, leisure and entertainment with over 120 stores from high street favourites to specialist gems and 4,800 free car parking spaces.

The Centre opened in 1997 and with further development of the Village in 2017 the White Rose is now home to Cineworld with a IMAX screen, an outdoor play area, new dining options including Wagamamas, Five Guys, Franksters, Fridays, Pizza Hut, Prezzo and Mozza's first restaurant in England.

Our objective is to become the UK's most sustainably managed Shopping Centre The White Rose Centre has always pushed to develop ways to manage waste in an efficient way maintaining

our zero-landfill promise. Working with our service delivery partners (Mitie) to ensure all our employees and retailers are kept up to date on current best practice and legislation.

Delivering training to our retail partners with visual aids like posters, colour coding and clear labelling has improved understanding of our waste streams. Following a turbulent year within our sector we have had to review and manage costs and deal with changes at very short notice. Improving sustainability should be at the top of everyone's agendas moving forward.

When we started this project the life span of our food digester was nearly up. We had a waste to water machine for 5 years and looking at how technology had changed as well as keeping an eye on legislation changes in Scotland, Wales, Northern Ireland, and the Republic of Ireland, we decided to move away from Waste to Water machines.

After looking around we found that no matter what machine we fitted we would still need to have the residue removed from site alongside food waste that cannot be digested.

ReFood was the most cost-effective option, by providing disinfected bins that can go within units for food waste our retail partners have found this to be beneficial. We have removed a manual handling risk from tipping food caddies into a food machine. This means that staff can be redeployed to front line roles in the centre ensuring the centre is COVID safe.

The potential savings from changing to ReFood mixed with energy, water and labour costs would be around £46,000 per year as well as producing power with Anaerobic Digestion. With the introduction of the new food bins and working with the retailers we have colour coded and clearly labelled our waste streams creating a visual guide for staff and retailers on site to follow.

We have worked with all retailers by offering support and training rather than the threat of fines and have

found it to be very successful. The White Rose has had to carefully manage our outdoor spaces as they provide habitats for birds, hedgehogs, bugs, bats and bees.

Our 2 water features include reed beds that provide habitats for King Fishers, Coots, Finches, Mallards and Herons. The numbers and sizes of fish within the water has had to be managed to ensure that the birds food source is protected. Our beehives are on the Centres roof and are home to a mix of Buckfast bees and European honeybees we work with a local beekeeper and have joined the British Bee Keeping Association to receive training.

The centre is surrounded by agricultural land and our bees are vital pollinators to that and the surrounding gardens and wild spaces.



We also created wildflower meadows on site instead of manicured lawns as part of this project. As the project went on we wanted to reduce the amounts of chemicals used on site. To do this we reviewed how we clean our floors and invested around £54,000 into new battery powered machinery for inside and outside of the Centre.

The use of ec-H2O technology from Tennant and floor pads we have managed to remove chemicals from cleaning the main floors within the centre.

We removed 2 diesel powered external sweeping machines for 2 battery powered ones that deliver a more versatile clean around the site. The change has also saved around £6,000 per year in fuel costs. The Centre offers free electric vehicle charging points for all our customers and staff with a planned increase in charge points planned. The centre has installed new LED lighting across the entire site that consumes up to 90% less energy than traditional bulbs. The installation project, saw new lighting installed in the shopping malls, car parks and perimeter roads.

The centre has 2902 solar panels on the centre roof that generates 680,000 kWh per year (200 homes worth of power for 12 months) This had resulted in a 20% reduction in electricity use year on year.

The success of the project so far has not only benefitted all the Retailers on site as it helps to uphold their own bespoke environmental policies that in most cases are in place from a corporate level. The centre has benefited with regards to ensuring they are fulfilling their environmental obligations. We have created and maintained some beautiful open spaces for customers and staff to enjoy.

The centre takes immense pride in knowing that we have also contributed to reducing some of the following issues:

1. Harmful chemicals and greenhouse gases are released from waste in landfill sites.
2. Recycling helps to reduce the pollution caused by waste.
3. Not just saving energy but creating energy.
4. Habitat destruction and global warming are some of the effects caused by deforestation.

5. Recycling reduces the need for raw materials so that the rainforests can be preserved.
6. Larger amounts of energy are used when making products from raw materials. Recycling requires much less energy and therefore helps to preserve natural resources.
7. Reduce financial expenditure in the economy.

Making products from raw materials costs much more than if they were made from recycled products. 8. Preserve natural resources for future generations. Recycling reduces the need for raw materials; it also uses less energy, therefore preserving natural resources for the future.

YANNIOTIS & ASSOCIATES

INTERRELATIONSHIPS_UNIVERSALLY DESIGNED SUSTAINABLE HOUSING COMPLEX FOR SUPPORTIVE & COLLECTIVE LIVING ALONG WITH PUBLIC USAGES IN AN HISTORICAL URBAN CONTEXT IN ATHENS

AIM



INTERRelationships is a Pilot, Sustainable, Collective, Lifetime Housing, Supported Living Complex with Public Usages that hosts individuals or families with (or without) disabilities. The complex belongs to an organization, NGO or body and proposes a Sustainable Dwelling Model aiming into integrating these people with work and joint participation in a multitude of activities with city residents. The Apartments of the complex are designed in order to allow Independency, Accessibility, Privacy, Family (or Supporting Team) controlled intervention boosting self-esteem and dignity.

Public Usages offer Supportive Employment opportunities, satisfying the Social Needs of the tenants through social, cultural and leisure revenue-generated activities necessary for the operation and economic growth of the Complex.

Fundamental aim of the project is to demonstrate that UD fits into buildings or complexes with modern

aesthetics by proposing a sustainable dwelling model. Sustainability is defined in terms of Infrastructure (Zero Energy), User (Universal Design, Health Monitoring Technology, Community Living, Social Integration, Potential Job offer) and Operation Management (full Human and Spatial Resources Utilization, Zero Waste, Water Management).

ACHIEVEMENTS

Sustainability in terms of the User

1. Compliance with UD principles for the design of all premises and equipment
2. Integrated Monitoring Health Technology
3. Foster care and a variety of new and innovative services such as early intervention, family support services, supportive living

Social Integration and self-esteem are boosted through:

1. Supportive living related services (e.g., supported employment)
2. Social Interaction with city residents
3. Community Living
4. Public Usages run by tenants: Indoor Cafe, Roof bar, Pool Bar, Swimming Pool, Multipurpose room, Creative workspaces, Indoor/outdoor exhibitions, outdoor screenings, playground

Sustainability in terms of Infrastructure

Energy efficiency and reduction is ensured through passive and active systems. Planted roofs, water element and planting improve microclimatic conditions. Polycarbonate sheet sidings allow immense natural lighting thus reducing energy consumption during daytime. Geothermal/thermal mass systems are employed for cooling, heating and hot water. Decentralized blower units, waste heat recovery, and flexible multi-mode operation employed for maximum efficiency and indoor comfort during all seasons. Photovoltaic panels generate enough electricity to cover significant part of residential needs. All these systems along with the compliance of the Construction of the Building Envelope to the Passive House Standard, satisfy the ZERO ENERGY terms and energy footprint of the complex Infrastructure.



Sustainability in terms of Operation Management

1. Zero Waste:

- A) Concentration, biological purification and reuse of rainwater and gray water
- B) Use of waterless urinals
- C) Waste management by installing bins and composting equipment
- D) Recycling Policies

2. The utilization of the resources of the complex:

- A) The spaces, the uses and the available human resources are utilized for the sustainable operation and generation of revenues of the complex.
- B) The tenants stay in the apartments by paying a small contribution and by offering work in the complex.

IN DETAIL



We consider this project to promote and make known to the general public in Greece and abroad the key advantages of UD in combination with the demand for green technology as a model of sustainable development. It will demonstrate that the UD also fits into buildings or complexes with modern aesthetics that do not refer to closed institutional structures. Consequently, this complex can serve as a model of housing for the general population and a model of self-management, making use of the most of the actual spaces and resources. Finally, it is called upon to promote the principles of UD by pointing the way to the modern age, contrary to a residential environment that constantly raises barriers for its residents, limiting or excluding their participation in the city's social life.

The project has been selected as a Good Practice 2019 by the Design-for-All Foundation and is currently shortlisted in the S.ARCH Awards 2020.



YANNIOTIS & ASSOCIATES

ARCHITECTS & CONSULTING ENGINEERS



A **Lifetime Design** Residential Complex that has been developed to propose a **Sustainable Dwelling Model**. Sustainability is defined in terms of **Infrastructure** (Zero Energy, CO₂ Emissions Reduction, Bioclimatic Design Strategies), **User** (Universal Design, Health monitoring Technology, Social Integration, Community Living, Supported Employment) and **Operation Management** (Utilization of complex resources-both human and spatial, Zero Waste).

We design for a Lifetime...

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ZURELI INTERNATIONAL

THE GLOBAL SEARCH ENGINE FOR 'GREEN'

AIM

We are helping businesses adopt sustainable solutions by bringing together and connecting the buyers and sellers of green products and services. By offering a bespoke service for businesses, we greatly reduce the time and resources required to locate the sustainable solutions that clients are looking for. We will also bring new ideas and solutions to your attention - after all, if you don't know what's available how can you find it?!

ACHIEVEMENTS

We have created one of the largest databases of companies (4,500), sustainable products, and services in the world, which is growing at around 75 companies per week, we create webinars for different sectors, online digital marketing programs and are helping Multinational companies, SME's, address their sustainability goals. We produce bespoke procurement research products lists based on the client's requirements.

IN DETAIL

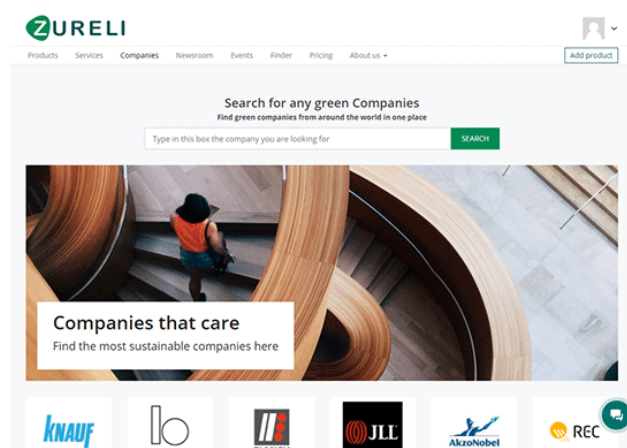
What Did the Project Involve Doing?

At the core of the Zureli project is data, data of companies, products, services, and professionals within all sectors of sustainability. We needed to create a global centralised system for capturing and indexing this information, an online platform was created to hold and categorise this data and allow it to be found quickly, with now over 4,500 companies from across the world and covering most sectors, our database of companies grows at a rate of between 50 and 90 companies per week, making Zureli one of the largest data libraries of 'Green' information.

Building our core data will be an ongoing function of ours, as more and more solutions come to the market each day. We produce product data sheets that targeted both the industry sector and country, keeping the information relevant to the person receiving it. These include F&B, the built environment, designers, construction, and hospitality.

Currently, we only operate in English and our key markets are Asia, Europe, and North America.

We work with all types of business to help provide Procurement Research with the solutions they need to achieve their SDG's by producing bespoke lists of companies and products that can provide the solutions they can use today, these data sheets are sorted and categorised based on the client's unique needs and list key information: certification, price, discounts, distribution, terms of sales, etc, giving the buyer the data needed to make a quick an informed decision. We work with Green Organisations, Trade associations, NGO's and others to build our database, in the last three years, we have a list of professionals of over 75,000 across the world. This has been achieved through many marketing channels including social media.



Why Did You Do It?

Our belief is simple if we can make it easier for businesses to find the solutions they need; then more will be adopted. The sustainable sector is very fragmented, but all the solutions needed to address the climate already exist, you just need to know where to look. By building a centralised database of products, there is now a single place to look or ask to find what is needed, we also help to promote new ideas and concepts which would otherwise be impossible to find, after all, You can't find what you don't know is there.

What Did It Cost and Where Did the Money Come From?

The costs to date, which include building the platform and ongoing development, other software including CRM, email servers, online forms, accounts ETC and the staff in Sri Lanka but excluding my time work be approximately 150,000 USD, which has been all been self-funded.

If Quantifiable, What Did the Project Achieve in Terms of Sustainable Development, Economy, Environment and/or Equity?

We are helping to give the sustainable sector across a large part of the world a means to promote their solutions to the correct markets and enabling the adaption of green solutions which is helping both the green economy and the planet.

Who and What Benefited?

We are helping businesses locate and adopt the solutions their stakeholder are demanding, we help manufacturers promote their products to the right buyers, we are giving a higher level of options to buyers, this in turn reduces costs, increases profits.

Longer Term Benefits?

We are making it quicker to reduce the effects of climate change and reducing the time to market of

game-changing ideas. Where we will all benefit in the long term.

Was There Anything Innovative About the Project?

As we are not just a directory nor an e-commerce site we bring proactive B2B solutions that help with the implementation for a greener world and I believe we are the first company using this 'Let's get stuff done' approach.

Can Other Organisations/Communities Benefit From Implementing Your Methods?

All organisation can benefit from our approach.

What Did You Learn From the Project and are You Planning Any Further Development?

We have learnt that we all have to collaborate in a more meaningful way if we are going to make any real inroads with climate change within the time we have, we have learnt that just having a green solution is not enough, it has to be commercially viable to succeed and we need change our mindset to be less competitive and remember we are all in this together. The Zureli project will continue to grow and add value to the environmental sector as we develop other areas by promoting green projects, funding, jobs and expand the countries we operate in.



CSR World Leaders Volume 8

A Work of Reference

A selection of International CSR Excellence Award-winning papers, demonstrating corporate social responsibility programmes at their best.

www.csrawards.co.uk



**THE INTERNATIONAL
CSR EXCELLENCE AWARDS**

for companies that have a heart

INDEX

A

ACCORD HEALTHCARE

Improving Access to Life-Changing Medicine

Page 018

Accord have a long history of pharmaceutical philanthropy which has benefitted hundreds of thousands of patients in poor and hard to access areas across the world. Events of the past few years have shown how vital this work is, and during these testing times, Accord have even stepped up to fill the gap left by other pharma companies that have not been able to meet global demand.

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ACWA POWER MAROC

Gateway to the Sahara

Page 022

ACWA Power Maroc has not only famously reduced the carbon footprint in Morocco but has, through its impactful CSR strategy, changed the daily lives of its projects' neighboring communities in very significant ways. Starting in 2013, and fully supported by the company's management, the CSR committee has been able to design, implement, and continuously evaluate and relaunch dozens of initiatives and projects in favor of local communities, achieving extremely positive results. This was mainly due to the remarkable involvement, trust, and resourcefulness of the women and men of these communities.

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B

BLUEWATER SHOPPING CENTRE

Our Holistic Approach

Page 029

A recent highlight of Bluewater's CSR programme is the 20 Good Deeds project, introduced to support 20 local community initiatives to celebrate Bluewater's 20th Birthday. This project resulted in supporting 27 causes, providing 102 volunteers and 816 volunteer hours and 40,842 people benefitted from the programme. Projects ranged from paying for a 30-week lip reading course, to large landscaping projects requiring huge quantities of materials and many hours of manual work. The Giving Tree at Bluewater has been running since 2013. In 2019, over 18,000 Christmas presents we donated to 75 different charities that were distributed to disadvantaged children across Kent. In 2020, 4,311 presents were donated and £8,440 pledged via 'Tap to Donate'. This was achieved in a reduced time frame and reduced guest numbers due to lockdown and social distancing.

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BIOCAD

100 Days for a Dream

Page 034

The staff at Biocad have been trading their wishes to instead grant those of children in palliative care. By foregoing the annual christmas outing they instead applied their efforts to granting the wishes of more than 100 terminally ill Russian children including trips to Disney and formula 1. This is fully supported across the entire company.

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C

CARDINAL

Serving the Community

Page 038

Cardinal have a long-standing ethos and attitude of supporting their local community as well as helping in areas further afield. They have given tours, career advice and support to local students and have helped numerous children's charities to raise money and awareness.

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CHARGEBACKS911

Paid For Grades

Page 042

Chargebacks911 work to identify students most in need and provide them with the tools and motivation to succeed via their Paid for Grades programme. Paid for Grades is a unique corporate citizenship programme with the goal of fostering a generation of students with the skills and confidence they need to reach their potential. By offering a \$500 prize to each student who successfully raises their grades and reading comprehension, there is a significant improvement in many of the participants.

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C

COLAS UK PROJECTS

Community Initiatives

Page 045

Colas are committed to delivering CSR across all of their projects. They have delivered a series of impactful and measurable community initiatives, including - Providing 100 weeks of pre-employment support to local homeless candidates, including CV writing workshops, and help in preparing benefits applications. Co-ordinating 179 hours of volunteering, and £25,041 of donations or contributions. Working with schools, colleges and universities to advocate for STEM careers. Working with schools, colleges and universities to advocate for STEM careers. Creating or sustaining 88 jobs for candidates from the Greater Manchester (GM) region, several of whom were from homeless or refugee backgrounds.

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E

**EKER SUT URUNLERI-EKER DAIRY
PRODUCT**

Equal Opportunities

Page 051

This Turkish dairy company are pioneering support for staff with autism to boost the reintegration of these individuals into society, they have accomplished an exemplary employment project with the support of the Tohum Autism Foundation called Autism in the Workforce. Autism brings unique skills as well as challenges, and the Eker family are eager to promote their strengths.

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**ELLISKNIIGHT INTERNATIONAL
RECRUITMENT**

EllisKnight

Page 055

This recruitment agency has demonstrates their long-held belief that doing good benefits everyone. They offer free career guidance for those in need, operate as sustainably as they can and support and promote charities, amateur sports teams and educational projects.

DAVE HOLBY-WOLINSKI

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E

EOS SECURITY LIMITED

Better Tomorrow

Page 061

EOS are proud of their sustainable approach to site security, and have created training packages to help others do likewise. Their Zero Assaults Programme teaches non-aggressive methods to de-stress situations, while their SMILE system training packages have linked technology to training methods, all with an element of a more sustainable, ethical and socially responsible way of providing a unique service.

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GALLIFORD TRY INFRASTRUCTURE

Lordship Lane Phase 1&2

Page 064

When Stoke City Council chose to upgrade Lordship Lane the project was undertaken by Galliford Try Infrastructure who brought with it their standard approach of environmental considerations foremost. Careful mitigation was applied to protect newts and reptiles in the vicinity, while the surfaces were repaired using a base material which included over 800 used tyres, leaving an excellent all-year surface for horse and bike riders.

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THE INCREDIBLE HUSK INTERNATIONAL GROUP

Incredible Husk

Page 067

Agricultural waste is typically burnt, buried or dumped, yet it can be a very useful raw material. The people at Incredible Husk have developed a high quality packaging material that can replace many plastics, and at the end of its life it offers a third use as a highly effective fertiliser - essentially giving a closed loop system.

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INTERNATIONAL BANK OF AZERBAIJAN

An e-commerce infrastructure

Page 069

Despite massive recent upheavals in its business and staffing models, IBA has maintained an impressive CSR regime focussed on the next generation and the future of the country. They provide help and resources to improve literacy, financial awareness and also aim to provide effective, productive and equal learning environments by converting traditional books in Azerbaijani language to audio-books.

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L

LEARNING POOL

E-Learning

Page 072

Over the last few years Learning Pool have embedded an ambitious employee engagement, support and CSR strategy. During the pandemic they have worked with mental health and wellbeing charities to spread mental health and mindfulness support. Raising awareness of important issues is a high priority, and so Learning Pool have made some of their topical learning modules on their website completely free – for ever. These modules include awareness of Climate Change, Modern Slavery, Stress, Mental Health and Suicide. Learning Pool care about their staff, the communities, and the environment, and through being brave, and engaging internally and externally, they will return £1million in equivalent value to their communities over the next five years.

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M

MEDIA SMART

Smart Phone Awareness for Children

Page 078

As useful as smart phones are, they come with safeguarding issues for children. Media Smart have created a suite of awareness initiatives for use at school and home to help kids be more savvy in relation to the marketing they are exposed to on these devices. It has been shown to significantly boost their knowledge and has been met with delight by parents and teachers.

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N

**NORTHUMBRIA HEALTHCARE NHS
FOUNDATION TRUST**

Rehabilitation

Page 082

In 2019 the trust took a bold step forward to improve communications with patients who have hearing loss by appointing a dedicated Deaf Awareness project officer to make staff aware of the challenges faced by patients accessing healthcare services. As the coronavirus pandemic began, this became even more urgent as face masks were routinely worn by healthcare staff making it impossible for people with hearing loss to lip read. Over a period of one year, more than 1000 staff attended specialist deaf awareness training courses to improve communication methods between staff and patients. Most importantly, it is reaping many benefits for their hard-of-hearing patients.

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NOVATI & AZZURRI

Recycling Revolution

Page 086

In April 2018 Azzurri took the decision to work with Novati with the express goal of achieving Zero Landfill as quickly as possible. This project was to review service specifications, site specific requirements and to propose and implement changes that would achieve the goal and gain a greater understanding of the waste generated. Novati audited all sites prior to mobilisation to identify improvement opportunities that would focus on optimising service specifications at each site and one year later, zero to landfill was achieved.

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P

PSS GROUP

Tree Planting

Page 090

Property Support Services continue to plant trees for sites they manage, and they actively encourage clients and tenants to recycle as much as they can in order for them to plant more trees. They will be planting 70 trees (one for each year) in celebration of The Queen's Platinum Jubilee celebration. By continuing to plant trees in this campaign, there is less impact on the environment and the greenery benefits both the communities and the wildlife. Property Support Services have made suggestions for one of their clients - The Crown Estate no less - to encourage more wildlife on their roofs all year around by filling the spaces with nature-friendly flowers, bird boxes and bird bath/feeders. CCTV cameras can then relay all of this activity to reception areas and the like.

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R

ROSH ENGINEERING

VOC-Free Industrial Paint

Page 094

Rosh have developed an exceptional outdoor paint product that, under widespread use, can remove millions of kilos of VOC's from the atmosphere every year. The rapid-drying water based paint, ideal for pylons and substations, dries quicker, allowing faster return-to-work of the equipment and saving money as well as removing these destructive pollutants.

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S

SABANCI HOLDING

Sabancı Volunteers Programme

Page 098

Social responsibility has been a part of Sabancı since its foundation 48 years ago. The Sabancı Volunteers Programme, the biggest program of its type in Turkey answered both expectation of employees and the society while extending the scope of their knowledge and experience. Sabancı has also been at the forefront of the gender equality movement globally, the amount of women employees is 38.5% and Guler Sabancı, chairman of Sabancı Holding and UN Global Compact Executive Board Member has signed the UN Women's Empowerment Principles declaration and submitted the statement to former Under-Secretary-General, Executive Director of UN Women and president of Chile, Michelle Bachalet.

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SHELL PHILIPPINES EXPLORATION B.V.

Empowering a Country and its People

Page 103

Shell Philippines Exploration B.V. (SPEX) "Social Performance" approach anchors on three principles: enhancing positive impact, mitigating negative impact, and creating social investments. Key achievements include improving energy access, boosting ecological balance, aggressively driving against the spread of malaria, and improving market access for farmers. It also actively supports the country's response to the coronavirus pandemic. Energy security and independence are of huge concern in the Philippines- and this project bridges the gap between ambition and reality of a clean energy source that empowers the nation and allows its people to thrive for the future.

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S

STC

ERP Project

Page 108

This project is an extension of STC ERP pilot, this pilot served 23 non-profit organizations with an ERP system to improve and enhance organizational efficiency. The estimated SROI on this pilot was 3:1 which is expected to apply on the project expansion through offering 9 more technical solutions for free in addition to the stc ERP system.

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SUPERIOR ESSEX COMMUNICATIONS

**Creating the Sustainable Cable That Connects
Us All**

Page 110

Superior Essex Communications is the leading manufacturer and supplier of communications cable in North America, since 1930 they have operated at the cutting edge of innovation. Their landfill waste diversion programme has had a tremendous impact for the company, reducing their environmental footprint by more than 8.9 million pounds of waste from reaching landfills each year, or a total of 63 million pounds since the process began. Their reel re-use and recycling programme has reduced consumption of new reels by 4 million pounds annually.

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W

WHITE ROSE SHOPPING CENTRE

UK's Most Sustainable Shopping Centre

Page 116

White Rose's main project is to become the greenest shopping centre in the UK. The Centre developed partnerships that could help implement the project effectively, delivering reports and showing continuous improvement within the centre. The waste streams are very carefully monitored by staff, all bins are colour coded and clearly labelled. Training documents, posters and sessions are given to the retail partners so that staff can follow a visual guide.

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ACCORD HEALTHCARE

IMPROVING ACCESS TO LIFE-CHANGING MEDICINE

INTRODUCTION

Accord Healthcare is one of the fastest-growing generics and biosimilar pharmaceutical companies in Europe, producing over 5 billion tablets each year for patients in need across the world.



"We are very grateful for these donations as they help us provide effective care for patients in their time of most need... (the donations are) a treasure for us"
Clinic Doctor, Guatemala - July 2019

Our mission to make it better by the provision of access to high-quality medicines for patients is not only our commercial purpose, but one that runs to our long-standing partnership with global organisation International Health Partners (www.ihpuk.org). A charity who ultimately helps people in hard-to-reach, vulnerable and disaster-hit communities to get better access to medicine by overseeing, coordinating and delivering strategic medical donations. Without the intervention of this charity, many of the people living in these communities would not be able to access lifesaving medications.

Harnessing expertise from both organisations, Accord's commitment to our partnership with International Health Partners (IHP) has enabled 2.2million urgently needed medical treatments to reach over 50 countries serving some of the poorest and most vulnerable communities in the world.

Today, even when the entire world is looking to the pharmaceutical industry for hope against the fight of COVID-19, with medicine shortages recorded, our own staff on lockdown, global economic uncertainty, wide-spread lockdowns and country importing and exporting highly impacted, we never lost sight of this commitment ensuring that we not only continued supply of these vital medicines but actually went above and beyond to increase our supply supporting IHP with over 60,000 treatments.

Understanding that whilst many other providers to International Health Partners were unable to mobilise supply, our efforts had to therefore increase to ensure that those communities that were impacted by the effects of world events and who were struggling themselves to deal with the spread of the virus, meant that we had to step up our contribution even greater, to ensure that the very people who depended on our partnership with IHP were not left behind.

IN DETAIL

Our mission to make it better not only applies the healthcare providers and patients we supply medicines with but the communities around us and that is a responsibility we take seriously. We have recently refocussed our CSR Objectives and Strategy along with our employees which can be categorised into three key pillars:

1. Improving access to life-changing medicines to patients across the globe
2. Reducing our environmental footprint and working in harmony with our local community
3. Ensuring that we create a fair inclusive workplace

Since 2015, at the heart of this collaboration with International Health Partners (IHP) is ensuring our dedication to providing practical support to IHP by

donating medicines with the primary aim being that people in vulnerable and disaster-hit communities can access life-saving medications.

Accord Healthcare is proud that we grow these donations year on year and are to date one of the largest supplier of medicines to IHP. Our corporate charitable partnership ultimately improves lives in communities that have very little access to medicine and we are proud of not just the difference we have made since 2015, but the ongoing commitment that we have shown since. Without our collaboration, this vital charity would not be able to take on the mantle of supplying basic healthcare to those that desperately need it.

Project Aim:

Improving access to life-changing medicines to patients across the globe

Accord Healthcare has a long-standing partnership with International Health Partners (IHP) (<https://www.ihpuk.org/>), which ultimately helps people in hard-to-reach, vulnerable and disaster-hit communities to get better access to medicine by overseeing, coordinating and delivering strategic medical donations.

As the world focuses on providing vital medicines for patients suffering with Covid-19, IHP and its partners are working harder than ever before to obtain and deliver medicines for countries and communities where healthcare provision is lacking.

Together with supporting disaster response and long-term healthcare programmes, IHP delivers Essential Health Packs (EHPs) - these are pre-packed kits, filled with a range of essential medicines, to support critical primary health care delivery in any setting.

In the last 18 months, Accord's long-standing partnership with International Health partners has enabled 2.2million urgently needed medical treatments to reach patients in over 50 countries, including some of the most requested products such as antibiotics, antifungals, antiparasitics and anti-inflammatories: amoxicillin, ciprofloxacin, bendroflumethiazide, furosemide, folic acid and paracetamol. These vital medicines can provide treatments to life or death situations for vulnerable communities and are the ones that are the most desperately needed across some of the world's most poorest places where people lack access to basic healthcare.

With over 400,000 essential medicine treatments for internally displaced peoples camps in South Sudan and over 26,600 courses of antibiotics in 2018 alone, to support the health of people living in rural communities and ensuring they do not die from easily treatable infections.

These EHP packs are sent to the World Health Organisation (WHO), Non-reach out to organisations who work with groups on the ground in impoverished and war-torn/hard-to-reach communities.



Project Achievements:

To put these packs in perspective here are just three case studies in the last 18 months that Accord has supported:

Case Study 1: Bringing relief to people in Palestine

In March 2019, IHP sent a shipment of 49,127 treatments to Palestine with the support of Accord Healthcare. This enabled the provision of antibiotics, antifungals, antiparasitics and anti-inflammatories (such as bendroflumethiazide, furosemide, miconazole, prednisolone, piroxicam, amoxicillin, and water purification tablets) to medical care facilities across the Gaza Strip, supported by our in-country partner Anera. One recipient was The Society for the Physically Handicapped, which sees 3,500 patients each month, and helps to rehabilitate up to 600 patients each year.

The work we do takes on real meaning from the very people who we help:

Naela, 51. "I have been suffering from tendonitis in my wrist and fingers since 2016," she told us. Each day, she cleans her house, cooks for her family, makes bread and cares for her four children, tasks

that become nearly impossible with tendonitis, despite Naela taking "a lot of painkillers" without seeing improvement. "Every morning when my nine-year-old daughter asks me to comb her hair, I feel sad I can't help her," she added. Surgery is costly and results not guaranteed, but medications such as piroxicam can reduce pain and stiffness from arthritis. The market rate for this medicine is £23, putting it out of Naela's reach. Thanks to the funding and donation from Accord, Naela started taking piroxicam, eased her pain, and began to get her life back. "I have been able to start resuming my normal activities," she told us.

Case Study 2: Supporting Dreams

Our donations to IHP make a real difference to people such as Chisulo Alex, aged eight, who lives in Malawi. His grandmother Eva brought him to the health clinic with a high fever, vomiting and conjunctivitis. Clinic staff treated him with our medicines and he stayed in the clinic for two nights until his temperature fell. Chisulo was eager to go home and get back to school - he wants to be either a doctor or a famous footballer.

Case Study 3: Supporting in Disasters

In March 2019, Cyclone Idai, with maximum sustained winds of 130 mph, created several landfalls near Beira City in Sofala Province, central Mozambique. This devastating storm left around 1.85 million people in need of assistance in Mozambique. It wiped out roads, bridges and other critical infrastructure in its path, while high winds damaged or destroyed countless homes and buildings, including health centres and hospitals. Through our NGO partner International Medical Corps, which sent out a team within the week to assess impacts and provide assistance, we were able to donate much-



needed medicines including antibiotics, painkillers. Other medicines and treatments including hydrocortisone, miconazole, metformin, cetirizine were also sent, along with multivitamins and water purification tablets. One recipient was a woman named Ines, an elderly grandmother who lives near Estaquinha. In response to flooding, she gathered her five grandchildren and ran to reach a safe place on higher ground, eventually climbing a mango tree with the children. She removed most of her clothes and tied the children to the tree to keep them alive, in case they slept and fell. As the waters receded, she headed for the Estaquinha health centre, where helpers treated her and the children for skin infections, diarrhoea and injuries from being tied.

It isn't just about giving medication.

Our work with the International Health Partnership is one that goes beyond giving donations of medicines, it touches our employees who actively contribute to giving back and supporting IHP. As we stated, we recently refocussed our CSR Objectives and Strategy and knew that to make it work, to truly make it better we needed the support and commitment of our people. Our employees support our partnership with IHP across our 35 EMENA wide offices, which includes 32 CSR champions representing their office and site. Working together, our employees put IHP at the centre of the CSR charitable aim and have supported to increase more donations from our EMENA network including the Nordics and our manufacturing site in Fawdon.

Last Christmas the CSR champions made a collaborative decision to forgo Christmas cards for Accord instead donating the money towards IHP, helping them deliver approximately an additional 8,000 treatments in 2020. We are also supporting individuals to take on donating for IHP with one team member raising funds by drawing pet portraits by other schemes that we are investigating such as CSR champions donating personal use PPE masks to IHP.

Going forward

In the last 18 months, we have not only donated millions of medical treatments, but have also continued our commitment to make good our promise of delivering high-quality medicines to the people who desperately need them, even at a time when Accord is itself fighting almighty challenges to supply much-needed medicine for European patients fighting Covid-19 and other diseases.

We do not waiver from this commitment to make it better for some of the most vulnerable people in the world and we will continue to engage our staff with this vital charity. This year, despite COVID challenges, we are committed to doing even more with a companywide initiative to celebrate the 15th year anniversary of IHP where we aim to raise up to £10K was raised; this means we could provide up to 30,000 treatments for patients across the IHP network.

Added to this we are also highlighting this vital charity's work via industry-leading platforms such as Medicines for Europe and other high profile opportunities via our CEO who is a passionate ambassador of this charity and whose purposes matches our own.

"Accord is a greatly valued supporter of IHP. Through generous and long term donations of needed and high-quality product, Accord has enabled IHP to reach vulnerable and disaster-hit communities in over 50 countries. We appreciate the commitment of Accord staff who ensure that they go the extra mile on our behalf. From colleagues in manufacturing through to the Executive Team, Accord's commitment to IHP's vision and mission is evident.

We regard Accord as a leader in partnership development and are pleased that they use their growing platform to raise the profile of issues such as access to medicines, with their peers across the world." Adele Paterson, CEO, International Health Partners.

We Make It Better

ACWA POWER MAROC GATEWAY TO THE SAHARA

BRIEF SYNOPSIS

From its graceful wind farms, jutting out of the forested hills towering over the strait of Gibraltar to the internationally renowned power plants (NOOR I, II, III, IV) shimmering in the picturesque desert landscape of Ouarzazate, “Gateway to the Sahara”, ACWA Power Maroc has not only famously reduced the carbon footprint in Morocco but has, through its impactful CSR strategy, changed the daily lives of its projects’ neighboring communities in very significant ways.

Starting in 2013, and fully supported by the company’s management, the CSR committee has been able to design, implement, and continuously evaluate and relaunch dozens of initiatives and projects in favor of local communities, achieving extremely positive results. This was mainly due to the remarkable involvement, trust, and resourcefulness of the women and men of these communities.

We are therefore proud of our CSR strategy and achievements for two main reasons:

First, our approach is multi-faceted and overarching, involving about 70 multi-year, social, educational, cultural and environmental projects impacting several villages in the rural commune of Ghassate, located about 40 kilometers north of Ouarzazate. We believe that one or two projects would have been honorable contenders for the Award; nonetheless, we would like to stress the interconnectedness and all-encompassing nature of our numerous initiatives.

Second, we truly believe that the ways the CSR budget has been put to service these initiatives are remarkably efficient. Running at 32.681.686 MAD (about \$3.2 million), the budget may not sound spectacular, viewed internationally; yet, through

judicious oversight and the involvement of the communities and other stakeholders, we were able to extend the resources as far as possible to serve communities already known for their frugal and efficient ancestral management techniques. The value, monetary and otherwise, emanating from our budget management techniques goes beyond the initial investment, as is demonstrated in the extended summary.

OVERALL SUMMARY

The statistics related to ACWA Power Maroc’s CSR strategy implementation and community commitment on the ground are eloquent, verified, and compelling enough to comfort us in our effort to vie for this award. For this summary, we will proceed by presenting:

- A. A fictionalized, though highly representative, family story meant to showcase the extent of our efforts as they were implemented within their social, cultural, and economic contexts; in other words, through this story, we aim to put a human face over a complex web of figures/initiatives;
 - B. A brief account of the statistics and other data describing the projects which underline our community involvement, including their range, impact, and sustainability.
- A. The Story of Assou Family, Transformed by ACWA Power Maroc’s CSR Strategy & Approach**

The Assou family lives in Tasselmente village in the Territorial Commune of Ghassate. It is composed of the father, Brahim, 48 years-old; his wife, Ittou, 42, their daughter, Fatima, 19; their two sons, Ahmed and Rehou, aged 9 and 13; and the paternal grandmother, Ouicha, 65 years-old.

Brahim, the father and provider, is a farmer like any you would find in this region. Since the death of his father, he has been eking out a living by tending to about thirty palm trees and fewer almond trees. The few sheep that would graze close to the lean patches of vegetables were his pride and an insurance if he needed quick cash for an emergency (a death or a wedding in the family, etc.). Brahim's daily routine would only be broken by the call to prayer from the village mosque.

His wife, Ittou, remembers the time when she was the proud owner of over thirty sheep and goats, but water and grazing pastures shortages reduced the herd to only five sheep. Now, she does an assortment of chores, like gathering wood, cooking for the family and fetching water from a distant well. She rarely leaves the village to visit the city; when she does, it is usually for a medical emergency involving one of her three children.

The grandmother's chief specialty was baking bread in the outdoor earth oven, and cleaning after the sheep leave the house. She also churns the milk in a goat skin and saves the butter in an earthen pot to grow rancid—a prized local delicacy.

Fatima, the eldest daughter, left school only a few years after she enrolled at the age of eight. The school was too far and walking every day to it, sometimes in the dark, was not safe for a girl of her age. She quit and started to help her mother with cooking and making bread, not actually hating trekking for hours to bring drinking water to the household. She was also good with the needle, repairing and stitching the family's limited assortment of garments.

Now she regrets not going to school and learning new things, like her cousin and best-friend Latifa, who by chance lived closer to the only middle school in Ghassate. This explains why she keeps exhorting her two younger brothers to never quit school. Ahmed and Rehou both go to school, and seem to enjoy the long walk with the village boys, fired up by the prospect of going later to a high school in the shimmering city of Ouarzazate, about fifty kilometers away.

Like everyone else in the village, they heard of and discussed the exaggerated details of this huge project that would extract electricity from the sun, and would provide employment for everyone and

CSR ACHIEVEMENTS (2013 – 2018)



the electricity to all the villages of the commune. Not all the dreams of the sons and the father came true when the solar panels filled the desert around them and the four-wheel-drive cars became more numerous than donkeys.

But some did, when the Assou family was approached by local representatives and experts of the sun-power company who were eager to listen and ask questions about the family's most pressing needs. These experts even assessed the situation of the villages in order to identify other needs. The family was really happy to learn that the "sun project owners" are committed to helping the local populations, and that's over many years, as a gesture of thank you for allowing their people and projects to settle amongst them.

Brahim was surprised to hear that these people are willing to help him and the farmers to clean their palm trees and pollinate their small almond groves, while even getting paid for it. As if by magic, production yields started to dramatically increase and Brahim began bringing back home more money after each harvest season.

Better still for him, the newly built and improved roads by this company convinced him that his crops would fetch better prices if taken to markets further away from the village.

Fetching water was the most time-consuming chore for Fatima and her mom, Ittou. Now that this company has built a water source a few meters away from their home, they were both left with enough time on their hands to chat with neighbors and even learn new things. Ittou decided to join a literacy class that is run by the company only ten-minute's walk from her house. She was comforted and inspired by the presence of other mothers like her from adjoining villages attending the class as well.

Because Fatima loved stitching, she decided to join a handicraft women cooperative, where, she has heard, girls and women would earn money and even keep it for themselves. She had to attend

a handicraft training first. A few months after she joined, she was asked to take part in a class on first aid, organized by the same people from the company. She soon felt valued and empowered.

Ahmed and Rehou will walk no more for hours to reach their school. Their brand-new yellow bus would whisk them there quickly enough to have plenty of time to play a game of football in a field freshly constructed by the company. Both brothers have become good players and therefore will make the team that will play against other teams from neighboring villages in the football tournament organized by the company annually. They also hope to be together for every year's spring and summer camps, spent carefree on the beautiful beaches of coastal cities far away to the north.

The grandmother was happy to hear that this company, which has been doing so much for everyone in the family, has something for her too. She signed herself up for a few sheep that she would receive and hopefully take good care of. She hopes to regenerate the herd that she remembers her family taking out to the fields daily before the successive years of drought.

Even the mosque got a make-over with solar-panel generated lighting and pumped water for ablutions. Not too far away, an ambulance is usually seen stationed outside the rural health dispensary -- formidable assurance for every woman in the village that her pregnancy would be safeguarded if she needs to reach a hospital. For their more elaborate medical needs, the village inhabitants get to benefit from the twice yearly medical caravans, where even minor surgeries are carried out.

The only question on the mind of some villagers is whether these positive actions will last. But the question is soon dismissed, as the farmers look at their cleaned and manicured date palms which announce even better crops. They look at the spouting water source next to the mosque, now lit by solar panels, and feel reassured. Even the call to prayers is now louder and clearer after a gifted

loudspeaker has just been perched on the repainted minaret.

While the villagers initially doubted whether the company people and their commitment will stay beyond the first year, now they cannot hide their appreciative surprise that it has been seven years now and many more announced.

B. A Brief Account of our CSR Community Commitment

The targeted area is the Territorial Commune of Ghassate, outside the city of Ouarzazate, part of the administrative region of Drâa-Tafilalet, in Morocco. At the time of the 2014 census, the commune had a total population of 8448 people, composed of 1297 households.

From 2013 to 2019, important resources and efforts have been deployed by our CSR committee for the purpose of aiding in the development and betterment of the lives of the inhabitants of the rural villages, or Douars (see map of the area highlighting sites of projects and individual action plans).

From aiding with the development of infrastructure, supporting agricultural reform and best practices to helping with girls' and boys' education and sundry other highimpact social programmes, our CSR strategy has a proven record of community commitment based on efficient and creative management of resources as well as a strong and sustained relationship with the people, other stakeholders, and partners.

Specifically, our company has over this period invested a little over 32 Million MAD (approximately \$3.2 Million) in 70 projects whose varied outcomes meet at least 13 out of the 17 Sustainable Development Goals (UN's 2030 SDGs). We have been able to reach and impact an aggregate of 3200 families, 9900 children, 8000 patients, 1100 local farmers, 470 young people, 27 NGOs, and 300 economic actors. Our strategy was designed to incorporate the three pillars of sustainable development; namely, economic, social, and environmental resilience.

All our initiatives were environmentally conscious and sound, making every effort to contribute and support sustainable exploitation of the region's natural resources.

From the beginning, we focused on improving the overall living conditions of the people, injecting resources judiciously and leveraging the population's economic development potentials. Our priority and main focus is improving access to basic social services per national and international standards. We therefore supported (and continue to support) employability, crafts development and valorization, and the strengthening of entrepreneurship, with special attention being paid to the agricultural development of Ghassate.

Believing in the primordial role of education from pre-school to university, and in an effort to uplift the populations' lot, we laser-focused on the observable deficiencies of the educational system in Ghassate, with regard in particular to matters of



Education and Youth: School Transportation, Summer Camps & Olympic Weeks





Capacity Building Initiatives: Handicraft & Ironwork



access to school, health and sports activity, and pre-school education and infrastructure. Below are some numbers, covering varied sectors, emanating from our 2019 independently-conducted impact and sustainability study.

In the area of agricultural development, ACWA Power Maroc supported various projects aiming at regenerating the palm groves and almond plantations, two essential mainstays of the local economy. Thus, for the palm tree sector, 26.000 palm tufts were cleaned and pollinated, engendering in the process about 8000 working days, increasing yields by an average of 6 Kg/tree to more than 30 Kg/tree. Similarly, for the almond plantations, our actions focused on the treatment, trimming, and replantation of higher quality plants, leading production to increase from an average of 4 Kg/tree to more than 20 Kg/tree.

A sheep breeding program targeting 280 households, involved the distribution of 600 Dman sheep, compound feed and mineral supplements and resulted in substantive gains to the beneficiaries. To support local entrepreneurship and reinforce sustainability, 8 agricultural cooperatives were created, involving 260 active members. A project to support the installation of an almond crushing and packaging unit is ongoing, with our company providing the necessary equipment and the training to operate and manage growth.

Actions in support of education, youth and culture are our greatest pride as they involve all youth, eliminate hurdles to girls' education, and prepare

the population to reach out and better integrate with regional and national economies. These range from creating pre-school classes, helping with school transportation, the construction of two soccer fields, the organization of dozens of sports and cultural events, to actions that support personal growth like extracurricular cultural activities and the spring and summer camps, enabling school children to discover other parts of the country, especially sea-front cities.

In areas of health, infrastructure, and general capacity building, our initiatives are too numerous to list them all here (see attachments). They involve, for the health sector, fully upgrading the medical center of Ghassate, organizing mobile medical caravans, and procuring an adapted medical vehicle, considering the difficult access to health services for the locals living in remote and secluded areas. To improve access and physical mobility of the population, 6 Km of access roads connecting 4 villages to the main national road N23 were built.

Moreover, two village mosques (one in Agoudim Izerki, the other in Taferghouste) have been rehabilitated; as well as, for irrigation and drinking-water purposes, 2 water sources and 6 wells have been developed, serving 150 households each, with flows ranging from 8 liters/second to 20 liters/second.

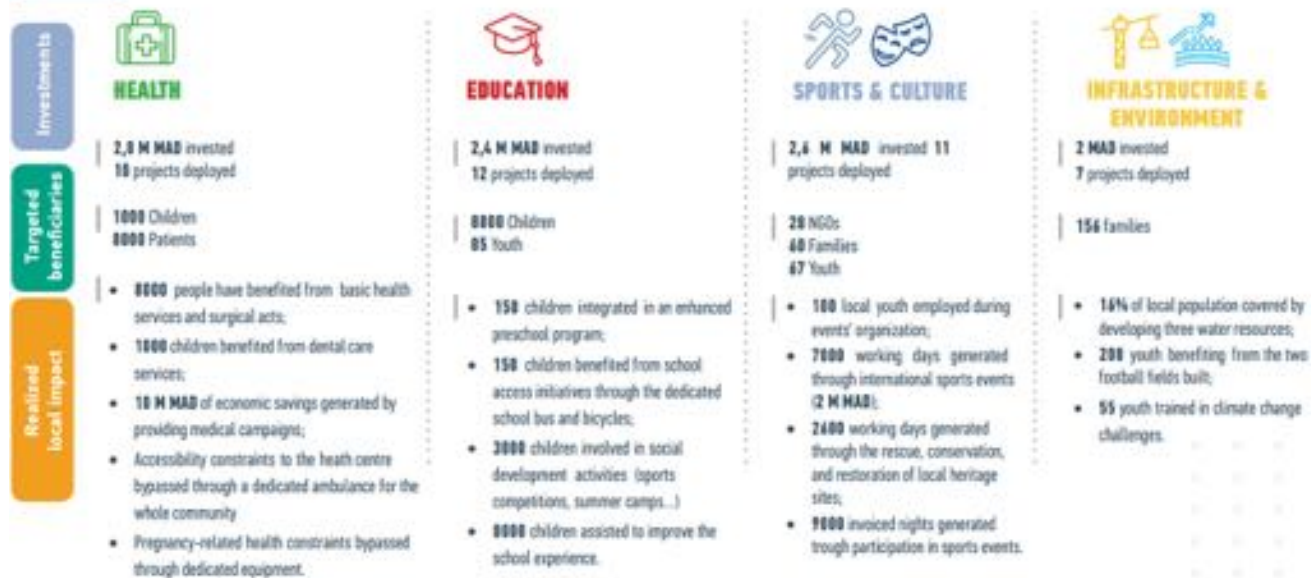
In terms of capacity building and job preparation for parts of the population, manual training programs, involving welding, metalwork, local handicraft, have

been organized. A great example of our commitment to women empowerment is the handicraft training that was organized for the benefit of a group of women, with whom we have collaborated to establish the first female handicraft cooperative, named "Nour Shams".

Our support of the initiative encompasses both the provision of equipment and, for sustainability purposes, a small push in the form of annual orders from the cooperative (like school aprons, wool knitted articles, beach towels...)

More importantly perhaps for the future of the cooperative, is the ongoing project of elaborating a collection of artistic designs, in collaboration with established Moroccan artists, to enhance the appeal of the cooperative's products both nationally and internationally

SOCIAL AND ENVIRONMENTAL DEVELOPMENT





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BLUEWATER SHOPPING CENTRE

OUR HOLISTIC APPROACH

SUMMARY

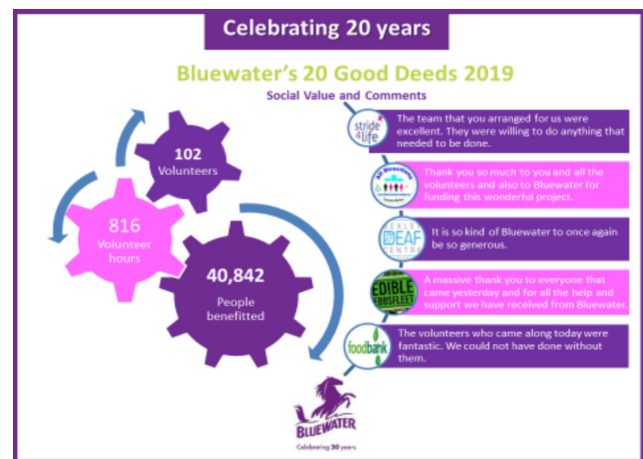
Since Bluewater opened in March 1999, it has set the benchmark for the ultimate shopping and leisure experience whilst demonstrating on-going commitment to Corporate Social Responsibility. Our holistic approach to CSR includes robust community partnerships, an inclusive sustainability program and charitable giving.

The recent highlight of our CSR programme is our 20 Good Deeds project, introduced to support 20 local community initiatives to celebrate Bluewater's 20th Birthday, however we struggled to pick a top 20 so we ended up supporting 27 cause! This also complimented a wider series of community initiatives all designed to not only support local organisations, but to ensure that Bluewater remains a positive influence within the wider community.

For sustainability, our latest campaign supported an enterprise competition with local schools which encouraged design, marketing, and team skills. This was a highlight in the last year's work, which included Bluewater being awarded a silver Green Apple award for Sustainable Water Management. These workstreams ensure Bluewater continues to not only support but enhance our local community, whilst understanding our contribution to global causes.

Given the scope of our 3-pronged approach to CSR there have been several benefits, a lot of which will be highlighted in the main submission but to summarise, some of the more impactful benefits include: -

- 2019 & 2020 total fundraising - £255,694.03 and in-kind donations - £632,896.00.
- 20 Good Deeds supported 27 causes and provided 102 volunteers, 816 volunteer hours and 40,842 people benefitted!



Despite the enormous impact of the Covid-19 pandemic, Bluewater has continued to support many charities and good causes, ensuring that the links with our local community remain strong and inherent to our ethos.

MAIN SUBMISSION

Introduction

Since Bluewater opened on March 16 1999, it has set the benchmark for the ultimate shopping and leisure experience whilst demonstrating on-going commitment to Corporate Social Responsibility. Located in Kent our overall site of 240 acres is surrounded by a 50-acre landscape of lakes, parkland and trees making it the perfect place for the whole family to enjoy. Bluewater has over 300 stores, over 50 bars, restaurants and cafes along with 13,000 free car parking spaces, attracting millions of visitors per annum. Landsec, the largest commercial property company in the UK, manages Bluewater.

CSR

Through our holistic approach to CSR, by linking community, sustainability and charitable giving, Bluewater demonstrates how working in partnership

enables us to not only support but enhance our local community. Landsec has a unique partnership with its Facilities provider Incentive FM, to exceed the expectations of the local community and our guests. The collaboration endeavours to meet corporate targets, whilst supporting local needs such as employability, community relationships and charitable giving. Active engagement with our community ensures needs are sourced, prioritised and supported accordingly.

Innovation and commitment

Bluewater strives to be a good neighbour and support the local community; this innovative partnership approach is key to Bluewater's success. We undertake and support many events, initiatives and issues to interact with the community and understand how we can work together for the benefit of all. Innovation for our partnerships are created by actively seeking opinions and being both reactive and proactive in our approach. We continually work to meet current pressing needs whether that is support for a local charity who has lost its meeting space to more global issues such as how we supported the local areas needs during Covid-19 through charitable giving, professional advice or public safety messaging.

We have a commitment to our Stakeholders to meet current needs and growing ongoing partnerships with key groups, to ensure their future success.



Bluewater has formed long lasting community relationships and ensures an inclusive 3-pronged approach to CSR.

Community

Bluewater strives to be a good neighbour and support the local community; this partnership approach is key to Bluewater's success. We undertake and support many events, initiatives and issues to interact with the community and understand how we can work together for the benefit of all.



To mark the 20th anniversary of Bluewater's opening, in March 1999, we delivered community initiative called '20 Good Deeds'. This initiative planned to support 20 local projects with either a monetary contribution for their cause, volunteer time from our Bluewater employees and partners, or both. Bluewater pledged to give something back to people from our local community; many of whom visit us as their local Shopping Centre and are integral to our ongoing success. Projects ranged from paying for a 30-week lip reading course, to large landscaping projects requiring huge quantities of materials and many hours of manual work.

The completion of the projects, many of which were multifaceted, would not have been possible without the commitment from our volunteers. Their valued contribution meant that we were able to devote time

and resource to each project to ensure the best possible outcome. Where possible, we matched the skill set of our volunteers with the demands of each individual task to ensure that the projects managed effectively. Due to this forward planning, many were completed ahead of schedule. Our aim was to finalise all projects within one year, but we were able to exceed expectations by completing all projects within a six-month time frame. With careful planning, all projects were completed significantly under budget. The remaining money has been pledged to provide ongoing support for many of the projects we helped over the coming months, to enhance their good work and to build lasting impactful relationships.

Not only have we been able to complete the pledged projects in a timely manner, but we feel we have exceeded expectation for all the charities involved. Without exception, all good causes that we worked with stated how much this enterprise has enhanced the lives of all those involved and we firmly believe that a lasting legacy has been created. From the original applications, we deduced that the completion of all projects impacted and benefitted over 40,000 people from the local community and beyond.

In addition to the 20 Good Deeds, Bluewater has several partnerships with a variety of organisations.

These partnerships receive regular support and demonstrate how inclusive our CSR offering is: -

- Sponsorship of Dartford Festival and Stone Fete to help our local councils and communities host amazing, free, family friendly events.
- We fundraise for World Cancer Day in February and Stand up To Cancer in October.
- We support Scotty's Little Soldiers, dedicated to supporting children & young people who have experienced the death of a parent who served in the British Armed Forces.
- Action For Children Christmas Jumper Day.
- A permanent collection point for The Hygiene Bank which aims to end hygiene poverty.
- Dartford Valley Rugby Club – donation of kitchen equipment and furniture and on-going sponsorship of rugby kit,
- Our Christmas gift-wrap service which offers work experience for long-term unemployed.
- The Learning Shop is a unique partnership between Bluewater, North Kent College and the Department for Work and Pensions. Established in 1999 and focusing on employability within the local community, The Learning Shop delivers a wide range of services; including professional training, development and recruitment for Bluewater and our community.
- The Community Forum was started before construction began, to share views and concerns with our neighbours. Since opening, the forums have continued with bi-monthly meetings held at Bluewater with representatives from Residents Associations and local groups including the Racial Equality Council, Council for Voluntary Service and the Police.
- Bluewater Chaplaincy provides confidential care for the wellbeing of all staff and guests and is led by the Lead Chaplain, a team of volunteers and an associate Imam in our dedicated 'Place of Quiet'.
- Since 2016 Bluewater has had an interactive 'Safer Home' store, complete with modern technology to help prevent and report crime. Launched by Kent Police in partnership with Bluewater, the store recreates a home living environment and is staffed by members of Kent Police.
- Bluewater supports Autism awareness on an on-going basis. We mark Autism Hour week in October by reducing lighting and turning off music between 4-6pm every day of that week rather than just on Tuesdays (which we observe throughout the rest of the year.)

- In November we support Purple Tuesday, which puts emphasis on the purple pound, the spending power of disabled people and their families. We work closely with organisations supporting people with autism in the workplace and have successfully employed and offered on-going support to several people through these agencies, this was recognised by winning the Valuing Disability Keiba award in 2019. Bluewater was also named the first Shopping Centre in the UK to achieve Level 3 Disability Confident Leader status from the Department of Work and Pensions.
- Bluewater introduced the Hidden Disability Sunflower Lanyards for use by guests on 31st October 2019.
- On-going staff well-being initiatives including marking World Mental Health Day, Wellness Week, and availability of over 25 trained Mental Health First Aiders.

Sustainability

Sustainability is an integral part of Bluewater's culture. Making a difference in the community, improving health and safety standards, and reducing environmental impacts are central to our business strategy.

In 2019, in a bid to cut single-use plastic consumption, we launched a new initiative, "Refill Me", which allows guests to fill up their water bottle for free at any Bluewater retailer displaying a Refill Me sticker in its window, with zero obligation to make a purchase from the retailer. We currently have more than 30 Bluewater retailers participating in the scheme.

Bluewater ran a campaign in the beginning of 2020 called Made in Bluewater. 'Made in' involved 3 local schools sending a group of year 10 pupils to Bluewater. The students received marketing, sales, branding and sustainability training from Bluewater's staff. The pupils were then set a challenge to design

a logo that represents Bluewater to be engraved on a reusable drinking bottle. They then had to come back to Bluewater and present their design, supporting social media campaign and sales pitch.

The winning school had their logo printed on Chilli's bottles produced and they then will sell them on site and at school to raise money for their chosen charity. This campaign was excellent in demonstrating the way we can combine sustainability, skills-based volunteering and employability to deliver tangible community and sustainability outputs.

To increase environmental awareness among guests we also refreshed our nature trail by collaborating with the Hungry Caterpillar, installing new environmental information boards and a wooden hungry caterpillar and a spider climbing frame.

These initiatives form part of a wider scheme of environmental work that includes energy efficiency, renewable energy generation, water management, biodiversity net gain etc. all designed to minimise Bluewater's adverse impact on the environment.



Charitable giving

In addition to the above projects, Bluewater has a commitment to philanthropy, ensuring we support our local community whilst remaining mindful of our potential impact.

Bluewater supports The Poppy Appeal each year by providing space in the mall for The Poppy Shop and for volunteers to sell paper poppies and merchandise. In 2019, a huge £104,579.59 was raised.

In 2020 we raised an incredible £103,849 despite the Pandemic limiting the fundraising time available due to retail having to close and site numbers being drastically restricted.

The Giving Tree at Bluewater has been running since 2013. In 2019, our guests donated over 18,000 Christmas presents to 75 different charities that were distributed to disadvantaged children across Kent. In 2020 4,311 presents were donated and £8,440.50 pledged via 'Tap to Donate', this was achieved in a reduced time frame due to lockdown and during a period of guest number restrictions to maintain the required social distancing. Covid-19 didn't stop us!

Social and Economic Benefits

Given the scope of our 3-pronged approach to CSR there have been several benefits, a lot of which has been already highlighted. To summarise, some of the more impactful benefits include: -

- 2019 & 2020 total fundraising - £255,694.03 and in-kind donations - £632,896.00.
- 20 Good Deeds supported 27 causes and provided 102 volunteers, 816 volunteer hours and 40,842 people benefitted!

To ensure we always acknowledge and work on delivering tangible outputs the CSR work is reporting in our monthly KPI's, Quarterly dashboards, Quarterly Sustainability Board meetings and Annual review. Landsec also informs stakeholders via their annual performance report.



The future

Due to the impact of Covid-19 we had to be resourceful and inventive in our CSR delivery, whilst remaining committed to maintaining and strengthening our community relationships. We will strive to deliver a high level of on-going engagement during Covid-19 and beyond and seek to exceed expectation. We are mindful of the devastating effect the Pandemic has had on charity support and good causes and we will endeavour to do all we can to support our collaborative partners in the future.

We truly believe the approach that we have adopted could be a blueprint for other businesses as we have seen the models we have initiated being used by Landsec and Incentive FM to deliver wider CSR programs on a local and national level.

BIOCAD

100 DAYS FOR A DREAM

AIM

“100 Days for a Dream” is the first Russian corporate volunteer project in the field of palliative care.

BIOCAD is the largest biotechnological company in Russia that develops and manufactures medicines for the treatment of cancer, autoimmune, and infectious diseases. Within the framework of the 100 Days for a Dream project, the Company demonstrated the importance of giving employees the opportunity to participate in charity events and do good deeds themselves.

The main idea of this volunteer project was that by refusing to hold a corporate New Year’s event, the Company’s employees could save money and fulfill the dreams of seriously and terminally ill children. Exactly 100 days before the New Year, employees turned into wizards and fulfilled the cherished desires of children who were wards of charitable

foundations. Among the desires were a guitar concert, a walk around Saint Petersburg, a soap bubble show, a trip to Formula 1 racing, and a visit to Disneyland.

Thanks to the project, Company employees were able to help children and learned to provide volunteer care and interact with patients receiving palliative care. Project participants became more informed about the activities of their Company and joined a team of internal ambassadors to launch a volunteer movement and promote corporate values within the Company.

The project involved 410 employees from all divisions of the Company: R&D (30%), BackOffice (27%), Manufacturing (23%), IT (20%). During the project, employees realized 115 wishes. They traveled over 380,000 km, visited 56 regions of the Russian Federation, and delivered more than 100 kg of gifts. During the project, employees received



more than 150 letters of thanks from families and children whose dreams came true. Volunteers were bold and determined; they went to distant villages and cities, getting to know families and children, doing good deeds and trying to do the most important thing for palliative patients—to make each dream come true!

IN DETAIL

Every year, at BIOCAD, we conduct a survey of employee engagement. Thus, according to the results of the 2018 survey, the company's priority growth area was the development of CSR. So, we decided to create a special volunteer program "100 days for a dream". We organized many activities to implement the project:

1. Weekly vlog about the realization of children's wishes. The presenters are the employees themselves. Content: arrival, first meeting and acquaintance, gift-giving, time spent together, interviews;
2. Creating a powerful information flow about the project using all corporate communication channels: news feed on the internal portal, newsletters, chat bot, TV panels and interactive stands for employees at production sites who do not have an access to desktop computers. Branded walls in the meeting rooms and mirrors, as well as all cups in the office;
3. Landing page not only with wishes, but also with children's photo and history of a dream;
4. Special badges in the employee's personal profile on the internal portal. After taking part in the project, a volunteer receives a badge "I am a volunteer". This is not only a way to encourage, but also an opportunity to engage others;



5. Educational and psychological training. More than a half of participants didn't know anything about palliative care: how to communicate with seriously ill children and their parents, how not to harm them, and how to prepare yourself for the meeting.

Implementation plan:

I August — September 2019: Planning and announcing

1. Developing concept and visual identity.
2. Branding of premises, desktops and portal
3. Producing souvenirs (branded goods for participants, stickers, covers, hoodies for everyone)
4. Layout and launching website with a countdown timer
5. Interactive stands on the production sites with access to the website
6. A week before launch — promo campaign. News (portal, chatbot), VP's video message (portal, newsletter, daily broadcasting on TV panels)

II September, 18 — December 2019: Dreams are coming true

1. 100 days, 61 cities, 10 kg of gifts, >380,000 km covered to make children's dreams come true.
2. A team of 3-5 volunteers went to fulfill the wish of the little dreamer, others sent additional gifts or signed branded holiday cards
3. Communication: TV panels (project news, photos). Weekly news and vlog releases (chatbot, portal). Weekly newsletter about new wishes. >80% of all dreams were booked within 4 hours
4. 3 open educational meetings. Topic covered: palliative care, rules of communication with children and families
5. >50 volunteers' training before meeting the family. Participants: volunteers, representatives of foundations, psychologist
6. 2 partners joined the project and paid for one trip and several gifts

III December, 26 2019: Presenting results on the internal event

1. Presenting NY's issue of the corporate magazine project as a cover story
2. Results, statistics and reviews published on the site
3. President of the company congratulated everyone on the upcoming New year and summed up the results of the project. No one could hold back tears during the watching of the final video with the best project moments.

Also, during the project we came across many challenges, such as:

1. Short notice — 1 month from idea to launch
2. Employees' lack of knowledge about communicating with palliative patients. Solution — educational meetings, psychological trainings and support from other volunteers

Summary

According to the results of a survey of employee engagement, the Fulfillment of Social Obligations item

↑ by 5%

In the comments, the staff spoke particularly positively about the 100 Days for a Dream project.



3. The limit of those who can personally congratulate the kid. Form a team of volunteers, others could send a gift or a letter
4. There are no special chairs and beds in Russia — it's necessary to make a special documentation packages or organize delivery from abroad. Any kid's journey requires medical equipment and support, as well as mountain of paperwork.
5. We did the impossible: got a sold-out ticket to the Formula 1 special zone for disabled people. The event started a week after the launch.

In spite of all these challenges we were able to achieve a great result. "100 days for a dream" is the first corporate volunteering project in Russia in the field of palliative care, which simultaneously brought together more than 400 employees, 115 children and their parents.

An important achievement for us is that even after six months, employees continue to discuss the project and their personal experience. For instance, at the quarterly event in honor of awarding the best employees, 13 out of 15 nominees awarded as the best employees in Q4 2019 were project volunteers. At the special awarding ceremony, they talked about their achievements, the importance and value of the project, and the transformative personal experience it gave each of them.

As BIOCAD develops drugs for the treatment of spinal muscular atrophy, the project gave to employees an opportunity to learn more about it, because it's the most common kid's diseases in this project. These children are often deprived of the opportunity to actively communicate with the outside world, so gifts that were given by BIOCAD employees, literally became the only way for them to interact with other people.

What we've reached:

- 800 applications were submitted for participation in the project (KPI 600 applications), 410 employees became volunteers (KPI 300 people)
- 60% of participants took part in a volunteer project for the first time and most of them never interacted with palliative patients
- Employees of all departments took part in the project: R&D-30%, Back-office-27%, Production-23%, IT-20%
- 93% of employees viewed the project's vlog for the entire time (80% KPI)
- 91% — the opening rate of newsletters about the project within 30 minutes, while the average opening rate is 73% within a week
- > 80% of requests were booked within 4 hours after the newsletters
- 54 publications mentioning the project in federal and regional online media
- 72,000 views of the project's vlog in social networks
- 2 business partners joined the project by participating in the financing of several wishes.

As part of this project, the Company managed to draw attention to the importance and necessity of supporting palliative patients, as well as the role of corporate volunteering among employees. And company succeeded!

CARDINAL

SERVING THE COMMUNITY

INTRODUCTION

Cardinal continually supports it's local community through fund raising, donations, sponsorship, raising awareness and knowledge sharing.

The business has an amazing ethos and culture of wanting to give back through proactive and pragmatic actions such as career advice, opening it's doors to students, supporting the local community and giving generously to support great causes.



Holy Family School during their site tour of Cardinal HQ

IN DETAIL

Cardinal is part of Bradford Manufacturing week (previous years and this year) and has actively engaged with a number of different schools (including SEN schools) to promote careers in manufacturing & construction. This has also led to a relationship with a particular SEN school, Oastlers School in Bradford, that we have worked with to enter the Considerate Constructors Big Build Scheme 2019, coming runner up.

We have also sponsored the school as they cycle coast to coast to raise money for new computers. Site tours of Cardinal's HQ have been completed for various schools, academies & colleges (Airedale

academy, Elliot Hudson College, Oastlers, Dixons Academy and Holy Family to name a few) to showcase the various less well known opportunities available within the construction industry. Work experience sessions have been completed at Cardinal, year on year, to enable students to gain real life experience of working at a company.

These experiences have taken place within the various different areas of the business including office, warehouse, project management, estimating and onsite. Cardinal have taken part in a series of mock interviews with students at various schools to prepare them for this essential part of finding work. Cardinal Managers, directors and employees have shown Bradford College design students around our facility on numerous occasions to show them what we do whilst advising them how to get into the industry, specifically design.

Cardinal presented at the Give Construction A Try Event at Wakefield College to advise the next generation of the various careers available in construction by getting young students engaged through the use of Virtual Reality and also explaining the roles available to them.

A further presentation was completed at the Go Construct event in Wakefield to offer specialist advice to teaching & careers advisors to enable them to correctly promote the different careers available in the construction industry. Several of the Cardinal team have provided details so that they could be featured on the Go Construct website explaining their own personal journeys to assist others in their career decisions.

Cardinal actively complete a wide and varied range of charity work which includes;

- Several cupcake days where monies have been raised for the Alheimers society
- A memorial walk charity event to raise money for the family of a
- several fund raising events for Cancer Support Yorkshire
- a charity head shave to raise money for a local hospice
- a charity event to raise money for guide dogs
- have donated toys to Bradford Toy Library for Christmas
- a Christmas jumper day with all funds raised going to Little Heroes which is a charity that aims to support children & families suffering from childhood cancer
- Melanie Slinger, Office Manager at Cardinal, continually sells sweets at the Cardinal HO with all the funds raised being donated to the Dogs Trust.
- Cardinal has, year on year, supported Sport Relief through various fund raising events.
- Easter eggs which were donated to a local charity so that distributed them to underprivileged, local children.
- Cardinal are proud to have sponsored the Junior World Cup at Shay Stadium.
- Cardinal sponsor Bradford City, Huddersfield Town FC and are part of the Huddersfield 100.
- Cardinal are actively engaged with Bradford Community and West Yorkshire Police.

Cardinal took part in the Bradford Dragon Boat race (again) to raise money for Bradford Hospital and have also signed up to take part again in 2020.

Sonia Jamieson, Cardinal's HSQE Manager, and Michael Brearey, Cardinal's Construction Director,



Leeds Pride event 2019

are Construction ambassadors who present to local educational establishments to promote construction as a career. Michael has also set a plan in place that there will be a further two members of the Cardinal team trained as ambassadors in 2020.

Cardinal's Construction Director is the Vice Chair of the Leeds Hub of the CIOB, actively creating & promoting local CPD events to assist others with their careers and has completed various talks at Bradford College, Wakefield College, Bradford University and Leeds Beckett University on Construction related subjects to spread knowledge of the construction industry and to promote it as a viable career choice.

Two members of the Cardinal team have signed up to complete the Inca Trail in 2020 to raise awareness and money for Mens Mental Health.

Michael Brearey has arranged an event to raise awareness of Mental Health Issues within the Construction industry which included guest speakers, a panel of experts and advice on how to manage & spot the signs which was attended by industry professionals. Cardinal took part in the Leeds Pride event to raise awareness and promote fairness & inclusion in the industry and three (3) Cardinal staff have completed their Fairness, Inclusion and Respect (FIR) training to become FIR Ambassadors.



Oliver completing his week of work experience on the various sites and also in the office.

Cardinal have a brilliant training and mentoring structure in place which currently has 16 apprentices and invests heavily in training & upskilling its staff. Two members of the management team have recently completed an NVQ Level 6 & Level 7, respectively, in Management.



Charity head shave

Two further members of the Cardinal team have been signed up to complete degrees funded by the company. The further training of twelve (12) members of office staff and the mentoring of four (4) further staff through to becoming Chartered Construction Managers with the CIOB. Cardinal are proud that our recently completed apprentice (Joe Vickers) has been employed full time and we have reinvested in him with an IOSH course and also a degree course.

Cardinal has donated a brand new seating areas to St Luke's CE Primary School to allow the children somewhere to allow them to increase their reading skills.

The Cardinal team took part in a collection of old / unwanted bicycles to give to a local shop which repairs them and then donates them to less advantaged people so they can get around easier.

Cardinal took part in a 'have a go day' with Trinity College which allowed the students to have a hands on experience of working onsite which was then followed by a talk by the Construction Director on his career path and the office based opportunities that there are in the construction industry.

Cardinal actively seeks to employ apprentices & trades people across various job roles and trades to provide investment in our local area and maximise our labour resource potential. We also procure from the local supply chain businesses for various aspects of our projects ranging from sandwich shops to local materials suppliers and subcontractors, which provides reinvestment in the local areas around the building sites.



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CHARGEBACKS911

PAID FOR GRADES

INTRODUCTION

Paid for Grades is a unique corporate citizenship program with the goal of fostering a generation of students imbued with the skills and confidence they need to reach their potential. This will set them on a path towards professional and personal success throughout their lives.

In partnership with Pinellas County schools and the Pinellas Education Foundation, Chargebacks911 works to identify the students in our county most in need of intervention and provides them the tools and motivation to succeed. By offering a \$500 prize to each student who successfully raises their grades and reading comprehension, we see a drastic improvement in many of the participants. They are also taught life skills, such as establishing a growth mindset, that serves them both in their education and personal development.

Since 2013, the program has evolved from originally offering ‘scholarships’ after finding that the students who needed the extra support most were deterred by that term. Paid for Grades continues to grow and evolve with a vision to recruit more corporate and education partners to expand the program throughout Tampa Bay and ultimately the state of Florida.

IN DETAIL

Paid for Grades is a nonprofit program founded by Chargebacks911’s co-founder and COO, Monica Eaton-

Cardone, and is financed entirely by the company. Eaton-Cardone was inspired when she hired several local students for entry-level positions, such as data entry, at the company’s Tampa Bay headquarters. However, she found many of these students lacked confidence, as well as key fundamental skills that were vital to performing their roles.

“It became evident that this is a problem growing by leaps and bounds, right in our own back yard,” Eaton-Cardone explained. In response, she set out to create a program that could help at-risk students excel academically, boosting the confidence of students who needed it the most in the process.

Today, Paid for Grades is backed by the Pinellas Education Foundation and offers a semester-long program at participating high schools in Pinellas

How It Works

- 1 School Administration**
 - Identify students whose reading ability is below grade level using Pinellas County testing tools
- 2 Paid for Grades**
 - Confirm students’ eligibility for the Paid for Grades program
- 3 School Administration**
 - Identify mentors
 - Schedule time for students and mentors to work together
- 4 Student**
 - Work with mentor until reading level improvement is achieved
 - Complete Paid for Grades online workshops
 - Ensure GPA is in the target range (see Program Criteria section below)
 - Maintain seven (7) or fewer unexcused absences
- 5 School Administration / Mentor**
 - Retest students’ reading level using Pinellas County testing tools to determine improvement
- 6 Paid for Grades**
 - Evaluate students’ transcripts to confirm GPA meets requirements
 - Confirm the student did not exceed seven (7) unexcused absences
 - Assess reading scores to ensure improvement of at least one grade level
 - Distribute awards for demonstrated improvement

County. Program organizers work with teachers and administrators to identify and enroll students who are performing below grade level. Teachers and administrators evaluate prospective participants based on students' academic performance, as well as their scores on the Florida Standards Assessment (FSA) English Language Arts (ELA). This is an annual, standardized performance evaluation conducted throughout the state. Students are considered eligible for Paid for Grades if their performance is deemed to be below grade level benchmarks. Administrators then contact prospective candidates and arrange for eligible students to complete a participation form if they're interested in taking part in the program.

Once a student is entered into the program, they are partnered with a school-approved mentor. The mentor and the student meet regularly and work together over the course of the semester to improve the student's grades and raise the student's performance on the FSA ELA assessment by at least one grade level. The program continues throughout the semester, meaning the student and mentor continue to work together through the end of the program year. In many cases, students may actually improve their abilities by the equivalent of two or more grade levels before the end of the semester.

While academic performance is important on its own, students are also taught life skills that will help them find success in their academic career and beyond. As such, students must complete a series of online training lessons focused on topics such as budgeting, job interview performance, and stress management. Through the various components of the program, our goal for each student is multifaceted:

- Boost their grades
- Improve their reading comprehension
- Foster a more confident, purpose-driven outlook
- Gain valuable skills that will serve them beyond the classroom

Students who complete the Paid for Grades program materials and maintain satisfactory attendance will receive a \$500 cash award at the end of the semester. For each successful student, their mentor will receive \$400, and their school will receive \$100 Microsoft gift card to invest in technology for ongoing learning.

In 2019-2020, Chargebacks911 contributed more than \$100,000 to student literacy in Pinellas County through our program. Thanks to the teachers and schools working with Paid for Grades, we exceeded our student participation goal and more than doubled the previous year's student participation; The 2018-2019 program awarded 40 successful students while the 2019-2020 program awarded 108 successful students.

Additionally, the average GPA of the students in the program grew by 34%. Their reading comprehension grew by an overall average of 226% and reading proficiency grew by an overall average of 182% based on the testing provided at the beginning and end of the program. Each student also completed the following life skills courses provided by Chargebacks911:

1. 8 Proven Ways to Boost Your Self Confidence
2. 8 Habits of Successful Students
3. Study Less / Study Smart
4. How to Relieve Stress
5. Growth Mindset: What It Is, How It Works, Why It Matters
6. Job Interview Tips for Teens

Another significant result is the attendance record of the students, in 2019-2020 Paid for Grades students only missed an average of 2.2 days of school for the entire program year.

Paid for Grades is first and foremost focused on the impact made on the individual students we support. For those students, the program has been proven to have a positive impact on their grades, reading

Program Mission

A Partnership Dedicated to Success | Paid for Grades is a program that aims to build a stronger and more sustainable community through improved literacy. School administrators, mentors, and Paid for Grades team up to provide high school students struggling with reading with the resources needed to succeed. We have made it our mission to achieve the best outcome possible—for the students, mentors, and the community as a whole. Thank you for your willingness to be a part of this great effort!

and comprehension, school attendance and teach them new life skills. Our vision is for Paid for Grades students to take the lessons learned throughout the program and apply them to their life beyond school. We want them to strive for more and ultimately pay their talents forward in the communities where they live and work.

The 2020-2021 program is positioned to set new records as over 300 students are active in this year's Paid for Grades class. To continue the exponential growth, Chargebacks911 is proactively seeking community partners to help sponsor new students and schools.

Our goal is to scale the program throughout the Tampa Bay area then the state of Florida. Together with the help of committed and passionate partners, we will further our mission to set students in our community on a path toward lifelong success and incentivize them to achieve more than they imagined possible.

Testimonials from students in the 2019-2020 program:

"I am so thankful to be part of the Paid for Grades program. I've learned a lot throughout this process especially how to maintain good grades while playing sports. This program encouraged me to ask my teachers questions about classwork and homework assignments. Normally, I would have tried to figure it out on my own or not do it at all. My favorite aspect of this program is that I was able to bond with my mentor. She made me feel very comfortable with asking questions and no question was stupid. Thank

you, Ms. Green. The tips for job interviews and the eight habits of a successful students will play a role in my new way of thinking moving forward. I would recommend this program to all my friends. Thank you for the opportunity. I love my school!"

"I like how you get rewarded for accomplishments. I learned what to do at a job interview that you show up 10-15 min early to show that you are on time. My favorite aspect of this program that it gave me a goal during the school year. Yes, I would recommend Paid for Grades for my friend because it gives them a goal to accomplish."

"I learned that you shouldn't be afraid to take on challenges, be confident, be proud of what you've done, make sure to have a good mental state of mind, and be professional during events relating to work. I have a visual image of the realization of becoming the person you want to be. So, this was really helpful. I'm glad to be in the paid-for grades program."

"Something I learned while being a part of the Paid for Grades program is that it isn't hard to stay in track if you set your mind to do it. Honestly, my favorite aspect of the program is knowing the prize I will receive after accomplishing my goal of keeping good grades. I would 100% recommend Paid for Grades to my friends, especially if they need more motivation to stay on track."

COLAS UK PROJECTS COMMUNITY INITIATIVES

INTRODUCTION

What?

We have delivered a series of impactful and measurable community initiatives – including the provision of:

- 100 weeks of pre-employment support to local homeless and refugee candidates.
- 88 local jobs, including 5 for homeless candidates.
- 179 hours of volunteering, and £25,041 of donations or in-kind contributions.

Why?

We are committed to delivering CSR across all projects and made quantifiable commitments as part of our framework bid. During mobilisation, we consulted our client, and local stakeholders to understand their priorities. We were able to build upon the core elements of our approach (local employment, community engagement, schools initiatives) with tailored initiatives aligned to local demographics/drivers.

Cost?

£90,690 across all measures.

Achievements?

£7.56M of positive local impacts, per the TOMs framework.

Who benefited?

Our employment initiatives have helped some of the most marginalised groups secure opportunities, whilst our school's engagement has benefited local

pupils, and our COVID19 initiatives have supported the socially vulnerable.

Longer-term benefits?

The CSCS training afforded to local unemployed people will provide candidates with a long-term foothold in employment, while our betterment of community/school/environmental spaces represents a positive legacy.

Innovations?

We have developed a collaborative Steering Group model to keep ourselves accountable to community / 3rd sector stakeholders, and introduced TOMs reporting to quantify our activities. We have also used digital delivery methods (e.g. virtual schools sessions) to ensure continuity during COVID19.

Can other organisations/communities' benefit?

The Council had previously experienced issues with contractors failing to fulfil their commitments and/or report them adequately. Our collaborative Steering Group model and use of a recognised reporting framework provides strong lessons for public/private sector partnerships looking to ensure delivery targets are fulfilled.

Learning?

We are adopting the management and reporting processes utilised on this framework as the model standard for our business and are working to replicate these techniques across our projects.

IN DETAIL

CSR benefit – does the entry identify clear CSR benefit?



Our award submission is based upon our CSR activities across the Manchester Highways Infrastructure Framework. We have delivered 5 highways improvement schemes to date, with a cumulative value of £14.6M. Our Regional CSR Lead has overseen a varied, impactful programme of community activities, which have included:

Social:

- Providing 100 weeks of pre-employment support to local homeless candidates, including CV writing workshops, and help in preparing benefits applications.
- Co-ordinating 179 hours of volunteering, and £25,041 of donations or contributions.
- Working with schools, colleges and universities to advocate for STEM careers.

Economic:

- Delivering 100 weeks of apprenticeships, to help tackle the regional skills shortage.
- Creating or sustaining 88 jobs for candidates from the Greater Manchester (GM) region, several of whom were from homeless or refugee backgrounds.
- Spending £6M with businesses in GM, to help maximise the “local multiplier effect”.

Environmental:

- Donating pallets, white goods, furniture and equipment from our de-mobilised sites to local charities, to reduce waste-to-landfill.
- Creating cycle storage areas to encourage sustainable transport modes.
- Volunteering personnel to help plant 70 trees in Manchester city centre.

We have delivered most of these initiatives “over and above” the contractual commitments included within our framework bid; demonstrating a real commitment to positively impacting local communities.

Degree of originality/innovation – new or novel solutions to problems?

We have introduced several innovations to tackle our client’s priority issues:

- Scheme activation: Manchester CC had previously experienced challenges in getting residents to utilise newly created cycling infrastructure in deprived areas, principally because of broader social issues -such as a lack of equipment, and skills/awareness. After delivering the Chorlton Road 1b scheme, we constructed a community cycle shelter, and worked with local charities to provide bicycles and proficiency training.
- Digital engagement: The onset of COVID19 in early 2020 threatened to undermine the

delivery of our CSR commitments, which were largely dependent on face-to-face engagement. We agreed to deliver schools engagement sessions and careers events digitally, ensuring continuity without creating transmission risks. We are also currently in the process of digitising our work experience provision, in collaboration with leading consultancy Springpod. This will enable us to deliver digital work experience placements in a structured, high-quality manner - which minimises disruption caused by COVID19.

- TOMs reporting: Framework contractors are required to report their CSR activities in a transparent, structured manner. To support this imperative, we introduced the National Themes, Outcomes & Measures (TOMs) framework. The TOMs are the one of the most credible and widely used reporting tools on the UK market, so they were ideal to satisfy our client's requirements on this framework. The TOMs enable us to provide high quality, externally validated CSR data to the Council; demonstrating that we have fulfilled or exceeded our tendered commitments.

- Fusion Housing.
- St Wilfred's and St. Philip's schools.
- Spark and Springpod (careers advocacy partners).

These partnerships enabled us to understand local priorities and demographics, so that we could develop the tailored, impactful initiatives identified above. Our monthly Steering Group meetings provide an opportunity to discuss performance, and to develop new proposals aligned to emerging local priorities. Stakeholder feedback has been



consistently excellent, with our Public Liaison Officer (PLO) Michelle recently winning praise from Mustard Tree's team: "Her consistency, her kindness [and] willingness to help our participants and viewers has been brilliant."

Commitment of the entrants - involvement of relevant stakeholders and employees have the staff demonstrated their commitment?

Stakeholders: The early partnerships our team developed with local charities and stakeholders have been integral to our success. We have built strong relationships with:

- Mustard Tree and The Booth Centre (local, anti-poverty/homelessness charities).
- Manchester South Central Foodbank.

Workforce: Our team have demonstrated huge enthusiasm for Colas' CSR strategy, and have played an integral role in delivery. Our personnel have used their company-allocated volunteering hours to support schools-based sessions, careers events, pre-employment initiatives, and deliveries to individuals who were otherwise been isolated by COVID19. Several our personnel have also volunteered for Colas Mental Health First Aid (MHFA) training programme, enabling them to become "Mental Health Champions" within our teams.

Social benefit - have communities or areas benefited?

We have delivered major social benefits by recruiting and training local people, with a focus on those from “hard to reach” demographics. As identified above, we have created or sustained roles for 88 candidates from the local region. Many of these individuals struggled to find employment independently because of language barriers, and a lack of access to IT equipment.

During mobilisation, we consulted our client, charities and stakeholders at length to understand priorities and drivers. Supporting marginalised groups was identified as a fundamental pillar of the Council’s skills/employment strategy, so we worked closely with local charities to engage candidates from homeless, refugee and NEET backgrounds. We provided pre-employment support (CV writing, application development, and CSCS training) to help remove barriers to entry to more than 60 unemployed local people. We were subsequently able to create 5 roles for homeless candidates.

Our initiatives have received a wealth of positive feedback from beneficiaries and stakeholders. One of the high-priority local individuals recruited to our Princess Road scheme recently commented: ‘I wanted to work to look after my family and earn money for the documents we needed to stay in the UK, the babies needed passports that I couldn’t afford so when I got the job, I was over the moon. The team have helped me to study CSCS and get the test paid for so I can get a better job, and they helped me get a new job when the Princess Road project ended. There is nothing I can’t ask; they are all angels.’

Economic benefit - have reductions or savings been achieved?

We have delivered economic benefits on this scheme by helping local people into employment (see above) and maximising the proportion of project spend retained in the local economy. We have spent

more than £4.8M with SMEs from GM, and over £1.2 with large enterprises from this region. This £6M+ represents a significant re-investment into the regional economy, which supports our “local procurement” policy.

We have also generated savings for community partners, by providing resources and volunteering time for local community partners free of charge (FOC). Cumulatively, we have delivered more than £25,000 of donations and in-kind contributions across the framework. Notable initiatives have included:

- Donating 6 tonnes of wood chippings from felled trees to community allotments
- Removing an asbestos-contaminated out-building from a local primary
- Creating additional road-markings outside a local school

We have also worked closely with the Council and local charities to mitigate the impacts of COVID19 on the vulnerable. We have volunteered our staff’s time to work as delivery drivers; collecting food and medical supplies from the Council’s depot and bringing them to shielding residents who were unable to leave home.

Evidence of measurable impact/benefits (environmental, social and financial) - are the theories supported by measurable improvements?

The figures identified at the start of our submission have been externally validated as accurate by the Social Value Portal.

The National TOMs framework we use to record/report CSR works through a series of “proxy values”, which quantify the local benefits of different CSR activities. Our team capture the volume/scope of activities delivered, and multiply them by the relevant proxy values, to identify the benefit delivered. We upload this data (along with supporting evidence

such photographs, testimonials, work experience diaries etc.) to the portal on a quarterly basis. The Social Value Portal's team scrutinise the data and evidence to ensure the reporting is wholly transparent and accurate, before producing project reports.

Using the TOMs proxy values, we have delivered £7.56M of cumulative benefit across the framework to date.



Replicability - can others adopt the procedures to their own benefit?

Our methodology is based upon proven principles of CSR planning/delivery, as opposed to business-specific processes or resources. Our core principles (understanding local needs, working with stakeholders, and remaining accountable), are not specific to our sector, and do not require specialist technologies or resources for their implementation. Our methodology can be adapted by businesses both within and beyond our sector, and we are happy to share learning and best practice through industry forums.

Our Manchester team are currently working with internal stakeholders to apply the processes and

lessons from this framework to other projects/programmes across our business. We are also working with several of our supply chain partners to develop their CSR provision, and are looking to share best practice with other contractors through collaborative industry forums – such as CIHT events.

Component of continual improvement and sustainable approach?

We drive continuous improvement through a CSR “Steering Group”, which brings our team together with the Council, local charitable partners, and MPs on a monthly basis. By meeting regularly to plan initiatives, convey progress, and secure feedback, we are able to identify opportunities for improvement, and keep our “finger on the pulse” of local needs.

This agility proved particularly valuable during the early, “hard lockdown” stages of COVID19. When the pandemic struck, we agreed to re-allocate our planned time and resources.

We postponed schools’ visits and work experience opportunities, in favour of carrying out food/medical drops to vulnerable residents, on the Council’s behalf. This ensured there was no reduction in the net CSR benefit delivered to local communities. As the lockdown has eased and schools have re-opened, we have re-adjusted our provision to include for the school’s sessions within our original framework offer.

Demonstrable programme for promotion and dissemination of the work?

Our in-house CSR and Marketing teams work closely together to promote our community activities in Manchester. To ensure internal awareness, we post case studies on our intranet page and Yammer,

to celebrate our team's achievements. To ensure external awareness, we share infographics and photos on our website, and social media pages (Twitter, LinkedIn):

- <https://twitter.com/ColasLtd/status/1337345995018031111>
- <https://twitter.com/ColasLtd/status/1336646496134029312>
- <https://twitter.com/ColasLtd/status/1367894894837121025>

In addition, we regularly apply for industry awards, and our framework team recently secured the North West Civil Engineering Contractor's Association's (CECA's) "Social Value", and "Young Professional of the Year" awards for 2021. Our CSR roadmap for 2021 includes a further tranche of communications celebrating our team's achievements, and we are also planning to launch a dedicated CSR sub-page on our corporate website. This will include photos, videos, testimonials and TOMs data from the framework.

Monitoring/reporting?

Our Regional CSR Lead retains overall responsibility for framework performance and management and meets regularly with the client's team to convey progress. As detailed above, we use the Social Value Portal's TOMs framework to capture/report our activities, which satisfies the Council's requirement for CSR data/evidence. SVP's team rigorously scrutinise the data and evidence provided for accuracy, before producing quarterly and annual project reports. This provides our client and stakeholders with confidence that we are accurately recording/reporting our activities, and the benefits they have delivered.

Accountability/transparency?

On previous frameworks, Manchester CC had experienced long-standing historical problems with contractors failing to uphold the commitments made at bid stage, and/or failing to capture and report their activities adequately. By establishing our Steering

Group model and implementing TOMs reporting, we demonstrated a high level of transparency and accountability from the outset. Monthly Steering Group meetings provide an opportunity for our

client and stakeholders to review our activities, which ensures that we remain fully accountable for the delivery of our commitments. We are also currently in the process of collating TOMs data from

the various framework schemes, so that we can publicise our performance on our website and social media channels.

Future expansion of the scheme - how do you intend to move forward?



Our framework team are currently progressing several initiatives to improve our CSR provision, these include:

- Finalising and rolling out our "digital work experience" provision.
- Working with local universities to facilitate careers events, graduate "year out" placements, and other initiatives. For example, we are currently working with students from the University of Manchester (UoM) to deliver cycling awareness competitions in schools.
- Extracting learning and best practice from the project, so that we can utilise a similarly structured approach our schemes.

EKER SUT URUNLERI-EKER DAIRY PRODUCT EQUAL OPPORTUNITIES

INTRODUCTION

It is estimated that there are approximately 950,000 adults with autism in Turkey. Only 28 of them are in business life. Employers 'and families' prejudices, not knowing how to recruitment are the reasons that reduce the employment of individuals with autism. Autistic individuals who are included in the business life face the risk of being dismissed after a while because they cannot be given the support they need.

As the Eker family, we have implemented a job coach supported employment program that can guide the entire business world with the support of Tohum Autism Foundation in order to bring individuals with autism who cannot find a place in business life to the society and to eliminate their families future concerns.

"Autism in Workforce" project is the first and only sustainable project made for the employment of individuals with autism in Turkey. As Eker, we work together with non-governmental organizations and advocate for government agencies to promote the employment of individuals with autism. This project allows individuals with autism to socialize with the respect they deserve by supporting both their workplace and their own development. Individuals with autism who are included in the business life gain their economic freedom and take a step towards living independently.

It is applicable in different sectors with the job coach supported employment model we have created. We believe to ensure that it becomes a model that can guide all institutions in both the public and private sectors and to become widespread in a sustainable format.



The fact that this corporate social responsibility project, which we have realized as a pioneer in our country, is awarded in the international arena will both motivate us and mobilize other companies for the employment of individuals with autism.

IN DETAIL

Autism is not a disease, but a difference. Individuals with autism make a difference with decent education. Autism is the most common neurologic disorder of today's time. While the prevalence of autism in newborn children was 1 out of 10,000 in 1970 and today this ratio is 1 in 54. In accordance with this data, it is anticipated that around 1,380,000 individuals with autism have been living in our country. Approximately 430,000 of this population is consisting of children and youths. The number of individuals with autism between the ages of 15 and 64 competent for employment is more than 950,000. Therefore, when the family members are also included within this figure, there are approximately 5,550,000 individuals in our country that are affected by autism. The annual cost of the state for each individual with autism reaches 100,000 euros. However, if employment is provided, this cost decreases to 35,000 Euros. Employment of individuals with autism provides economic comfort for both the state and the employed person with autism.

As Eker family, acting as taking the initiative and pioneering for the purpose of elimination of concerns and anxiety of families regarding the future and reintegration of the individuals with autism to the society, we have accomplished an exemplary employment project with the supports of Tohum Autism Foundation: Autism in Workforce.

The main objective of the project is to demonstrate and reveal the fact that the adults with autism can actually work in a factory environment, but of course by receiving assistance from job coaches. At the same time, not only working at the factory. Naturally, the underlying vantage point of this project is that:

Individuals with autism are in desperate straits especially after their parents, mothers and fathers grow old. If they are unable to work, and if they do not have a regular income, they become desperate for state assistance. This is definitely something causing suffering for the parents in particular. "What will my child do after I die? Is he/she able to look after himself/herself?" The project was actually born out of this concern and anxiety.

Our project has 3 main objectives. Our first goal is in-house. Our program, which started with the employment of 2 individuals with autism in the first place, is now continuing with 8 individuals with autism and 3 job coaches. Our goal is to employ a total of 12 individuals with autism to participate in business life. We are planning to realize a life home where they can not only participate in business life, but also continue their lives with life coaches after work. In this living house, they will develop their social life skills by fulfilling their responsibilities such as cooking, going shopping, daily routine cleaning and self-care.

Our second goal is to work with the public to get government support to support the spread of this model. We strive to create incentive programs that will ensure that the costs of job coaches are covered by the government. In this context, as Eker, we maintain our contacts with the relevant ministries and members of parliament, together with Tohum Autism Foundation.

Our last and most important goal is to make the business model we have created applicable to all institutions in both the public and private sectors and to spread it throughout the country.

We are taking firm steps forward to realize our first goal. We employ 8 staff with autism, 3 job coaches and 1 supervisor. Our supervisors and job coaches evaluate personnel with autism and make the necessary sensory and visual arrangements in their workplaces. Work coaches, who act as a bridge between staff with autism and employers and workers, support individuals with autism in both



their job skills and social life skills. From dressing up and taking off work clothes, greeting friends, behavior control, to the use of the cafeteria and other common areas, job coaches support our staff with autism with the applied behavioral analysis method. An orientation period of 2 months and an adaptation period of 8-10 months are planned for each personnel with autism. Our aim is for our staff to work independently, requiring minimal support.

The development and working speed data of our personnel are collected every week and annual reporting is made. We organized workshops to teach more than 600 personnel working in our factory and hundreds of personnel working across the country about autism awareness and how to approach individuals with autism. Individuals with autism are sensitive to loud noises, bright lights, high / low temperatures, crowds, and dislike sudden changes. For this reason, protective glasses, headphones, thermal jacket and structured working environments are arranged according to the characteristics of the individual. 5 of our staff work together with non-autistic colleagues in the packaging area, 2 staff as sorting staff in the auxiliary material warehouse, and 1 staff as data entry staff. With the integration practices we have made, all of our employees have

embraced our personnel with autism, which has led to an increase in their corporate belonging. Independent of job coaches, our staff with autism can develop social relationships with other workers and participate in various social activities.

An expert appointed by Tohum Autism Foundation comes to our factory every month to provide consultancy. Before the pandemic process, our staff who worked half a day and went to courses such as horse riding, sports, swimming, painting and music started to work full time with the pandemic process. During the quarantine and closure processes, our personnel were trained online and home skills such as food preparation, personal care and cleaning were provided. A mobile application “individuals with autism in the workforce” has been developed for our autistic personnel to use at work and at home. Individuals with autism or other pervasive developmental disorders who are recruited into the workforce are aimed to work independently with the features of the timer, timer and charts in the application. Individuals with autism and other pervasive developmental disorders can manage time with the timer, self-control and motivation with the timer, and learn more easily with the help of visual / auditory stimuli by dividing the work to be done in

small steps with the timetable section. To review the application: <https://bit.ly/2Rom8IC>

iOS: <https://apple.co/3nMPwVh>

In our workplace, we apply the job coach supported employment model in 3 different ways. In the 1st model, one-to-one support is provided to the personnel. On-the-job and off-the-job coaching support is provided to our employees with autism who need a high level of support. In our 2nd model, our personnel who need medium level support are supported only in cases in need of assistance, and they are supported to work independently. Our personnel who need a slight level of support work independently and are followed up by only online meetings and 1 meeting every 2 weeks.

In order to achieve our second goal, a report of “What to do to popularize the employment of individuals with autism” was created with the Tohum Autism Foundation and shared with the MPs and bureaucrats in the TBMM Autism, Down syndrome and other common developmental disorders commission. We went to Ankara about the project we carried out, explained it to the relevant attorneys and invited it to our factory for examination. We asked for support by explaining that the employment of individuals with autism will increase if the state meets the costs of the job coaching. Our contacts with the relevant ministries are continuing.

For our 3rd goal, we have explained our project to business professionals in various congresses since 2019. We established cooperation by applying to the “Support Technologies Grant Support” program provided by İŞKUR for the employment of disabled people. Again, with İŞKUR and our partners in 4 different countries, we started the Erasmus project to increase the employment of individuals with autism. We carried out visual communication activities aimed at increasing the awareness of autism and the employment of individuals with autism on the packaging of our products. We were frequently featured in the media and worked to increase visibility. On April 2, Autism Awareness

Day, together with İŞKUR, we organized a webinar for business professionals to raise awareness in the business world and to support them in employment. With our project, we have been in the press 497 times in the last 17 months. We invited non-governmental organizations and the business world to our factory and asked for support in spreading the model we created.

To examine our project in more detail, you can watch our promotional video from the link: <https://www.youtube.com/watch?v=Gv8P2kQICBY>

ELLISKNIGHT INTERNATIONAL RECRUITMENT

ELLISKNIGHT

INTRODUCTION

EllisKnight International are a Berkshire based recruitment agency, supporting exciting local and national

organisations with their talent acquisition strategy and providing our candidates with a hand to hold throughout their career. As a company we pride ourselves on our ability to help others and place tremendous emphasis on environmental sustainability, community support, charitable fundraising and providing our talented team with an environment to flourish within.

Our CSR policy has developed through continual analysis and close engagement with our team, valuing their feedback and implementing exciting initiatives. These include:

- Creating exciting charitable fundraising events to support both local and national causes
- Sponsorship of local sports teams and educational projects
- Becoming a proud signatory to the Armed Forces Covenant and being well placed as recruitment leaders to support our Armed Forces Community with exciting new job opportunities
- Committing to national recycling initiatives
- Significantly reducing our carbon footprint
- Providing a premium free recruitment service offering to all UK registered charities
- Providing our team with the opportunity to volunteer for local charitable projects whilst on full pay
- Supporting charitable giving through every work-related placement made

- Creating free work placements for our partnership graduates with trusted clients to grow their confidence and their skillsets
- Actively promoting local start-up businesses with free social media support
- Providing free online skills tests to all candidates to support their career journey
- Supporting our staff's well-being with flexible working, free healthy breakfasts and a range of perks

IN DETAIL

1.0 CSR Environment - Energy:

Following the purchase of our offices in 2019, we installed double glazed windows for the entire building as an energy saving measure. According to <https://www.myglazing.com/ggf-energy-savingscalculator/>, based on an office space of our size, this saves approximately 1.3 tonnes in CO2 emissions and 0.3 tonnes in carbon usage annually.

As the office is now a warmer environment during the colder months, it has greatly reduced our need to heat the office, whilst better airflow through improved window openings has greatly reduced our need to utilise a previously installed air conditioning unit. We also implemented a policy to replace all lighting within the office to either LED or Energy Saving Bulbs. This project was taken on as an energy-efficient option to help us further reduce our carbon footprint and costs to the business. Our end of year accounts reflect a £740 saving on energy related bills compared to the previous year even though our team has continued to grow.

Our team are also encouraged to turn off lights and all electrical items when not in use.

1.2 CSR Environment – Natural resources:

With regards to sustainable resource use, as a company we have always engaged with fair trade suppliers for beverages and food items for our daily healthy breakfast cart for the team. We have one shower on site that has been fitted with a slow flow regulator to support water saving measures and plans are in place to install a water meter so that we may further protect our environment through monitoring our water conservation. Taps within the office also have a sign above them to encourage staff members and visitors to ensure they are turned off properly when not in use.

1.3 CSR Environment - Travel:

As a flexible business that embraces new technology to support environmental sustainability, we use a range of online tools (Google Hangouts, Zoom, Skype, Hintro, Hinterview and Facetime) to meet our candidates and introduce our business to new clients. This greatly reduces the time we are required to spend on the road. We have also very recently put in place a contract with <https://www.cyclescheme.co.uk/> allowing our team to save money on a new bike and spread the cost through our salary sacrifice scheme.

As well as the increased health benefits that this will bring, it has been estimated through the scheme that our interested team members will save 718 kg of CO2 emissions annually, the equivalent of 34 trees. All our staff are now encouraged to work from home one day a week. The environmental benefit, based

on the total round trip that our team would take from home to the office on any given day, means that we are saving a further 1496 kg of CO2 emissions annually, the equivalent of 71 trees.

1.4 CSR Environment - Environmental supply chain management:

EllisKnight International are striving to become leaders in environmental sustainability and we firmly believe as a group that a successful future for our business and the clients we serve depends on the sustainability of the environment, communities and economies in which we operate.

We use eco-friendly cleaning products throughout the building and local tradespeople to support our local business community and reduce CO2 emissions through reduced travel. Our company has always returned all printer cartridges to our supplier to be recycled and we have greatly reduced our use of paper within the office by purchasing a state of the art online tracking system for all work completed by our team. Approximately 90% of our office stationery is second hand, received from a larger corporate organisation that no longer had a requirement for it, thus reducing unnecessary wastage.

1.5 CSR Environment - Waste:

As an organisation we are committed to try and recycle as much waste as possible and have a large mixed recycling bin to the front of our office. We request and encourage all staff, visitors and contractors to also recycle when on site. A recycling bin is also based within our staff kitchen as well as at the end of each bank of desks to encourage

There is now a greater call for businesses to give back and at EllisKnight International we are proud to provide holistic support to all seventeen SDGs through our four CSR and sustainability pillars - we are fully committed to lead with compassion and to put our people and our planet before profit.



our team to recycle items throughout the day. As part of our continued commitment to improving the environment, we are promoting recycling of even the 'nonrecyclable' items. EllisKnight International now work in close partnership with TerraCycle and are already a public drop-off point for two of their recycling programmes - <https://www.terracycle.com/en-GB/brigades/ferrerorocher-uk> and <https://www.terracycle.com/en-GB/brigades/ellacycle>.

We are extremely proactive in our approach and have several applications pending to act as a public drop-off for further TerraCycle programmes as they are required in our area. Whilst continuing to support the environment through this partnership, financial support is generated from the non-recyclable material we collect. 100% of these proceeds are donated to our chosen charity SSAFA, the Armed Forces Charity. We also have a close partnership with a family run upcycling business called Biddy's Barn who utilise unwanted items from the office and our business park, upcycle accordingly and make a donation from sold products to Me2 Club, a Berkshire based charity who enable children with additional needs to attend mainstream activities.

2. CSR Workplace

At EllisKnight International we pride ourselves on providing a brilliant family orientated environment within the office guided by a senior leadership team who offer constant care, a strong support network and exciting opportunities for all our staff. We have totally refurbished our office to create a lovely space for our team to enjoy and work in, including new kitchen facilities and games room (complete with foosball, table tennis and pool table), as well as a suitable desk arrangement to accommodate as much office cricket as possible.

We host monthly international cuisine days where the team bring in a tasty dish true to that particular country whilst funded social activities take place quarterly. All our staff receive an early finish on a Friday afternoon to get home to their families and enjoy the start of their weekend. Understanding that

our team are at different life stages with differing needs is crucial and we offer them flexibility in their working arrangements in order for them to be as fulfilled as possible. Flexible working hours are in place to support everything and anything from school runs to gym classes whilst all staff enjoy their birthday as an additional days' worth of paid leave. An interest free loan is available to every team member annually to support with those surprise expenditures that we can't always factor for in life and staff discounts are available on technical products and new bikes through our partnerships with techscheme.co.uk and cyclescheme.co.uk

Our team are actively encouraged to volunteer and support charitable causes – EllisKnight International offers two volunteering days on full pay to every staff member to support local community projects. We have invested in an International Charity Awareness Calendar to ensure we take every opportunity to support fantastic causes through office based fundraising initiatives and social media campaigns and our team meet weekly to plan for any upcoming campaigns we can support with.

Our brand new boardroom acts as our EK Centre of Excellence, allowing the team to receive ongoing systems training and development. Regular appraisals allow us to provide ongoing support for every employee and allow for any additional training requirement to be arranged. We are also excited that the Centre of Excellence will play host to our local Rotary Club with a Fundraising Breakfast Initiative on the last friday of every month. We are avid supporters of Health and Mental Well-Being, providing free nutritious breakfast items and snacks for our team every day and hosting regular endurance events with our clients to fundraise for excellent local causes and support strong team bonding. Very importantly, our Centre of Excellence acts as a quiet space for our team should they need to step away from a busy working environment and make a call to a loved one. We also fund a confidential mental health helpline service for our staff should they need any additional support outside of work.

As proud signatories of the Armed Forces Covenant, we would provide full support and paid leave to any member of our team called into Reservist action. As a recruitment agency, our pledge towards the Armed Forces Community naturally extends to supporting ex-military personnel and their spouses with employment opportunities both locally and nationally - <https://www.ellisknight.com/ex-military-division>

As a company we pride ourselves on our ability to deliver a superb service to our candidates and clients. Businesses are offered a range of innovative pricing solutions to support any budget without a compromise on quality whilst our experienced Customer Care Team provide constant support for our candidates throughout the first six months of the their new role.

EllisKnight International is committed to equality, diversity and opposition to all forms of workplace discrimination and regularly monitor the effectiveness of our policy - <https://www.ellisknight.com/diversity-policy>. Applications received to join our team or the teams of our clients are treated equally regardless of sex, age, sexual orientation, marital status, race, religion, religious beliefs, colour, nationality, creed, ethnic or national origin, gender reassignment or disability. As a company we are fully compliant with the requirements of Data Protection Legislation and support our clients to ensure they are as well - <https://www.ellisknight.com/privacy-policy>

3. CSR Community

EllisKnight International are exceptionally committed to supporting our community both locally and beyond and have been able to support and fund a number of exciting partnerships and initiatives. As a family orientated business, we have always been passionate about supporting our next generation and have sponsored Lydiard Millicent Junior Football Club for the last two seasons.

Our financial commitment meant that we were able to purchase brand new home and away kits for the squad through a local supplier as well as funding free teas and coffees for parents and supporters of both teams during home games. It's been repaid through a fantastic Regional Cup win and successful promotion to Division 2.

As corporate sponsors and organisers of the Silchester Primary School Adventure Challenge, we have also raised £5,689 that has been put towards the purchase of a large climbing frame for the children and further improvements to the school playground. We have a very close connection with Rotary International and two of the company directors are newly active members of Pangbourne Rotary Club.

As members of the Community Fundraising Team, they will be heavily tasked in engaging with local businesses and fundraising for local, national and international community projects. The EllisKnight



Directors also volunteer their time to act as a regular comperes for local community events including

Basingstoke's Place To Be Proud Of Awards,
the Reading Santa Fun Run,
the Naomi House Bubble Rush Fun Run,
the Me2 Community Quiz Night and
Sichester's Got Talent, helping to fundraise
thousands of pounds annually for excellent causes

In response to the Coronavirus outbreak we created a brand new initiative called E-KICC (EllisKnight International Charity Charter) to support every UK registered charity with a totally free recruitment service offering. We have joined in partnership with RNLI, Guide Dogs For The Blind, Blue Cross For Vets and Frimley Health Charity amongst others to enable them to continue to recruit staff with full agency support but without paying a penny for the service.

Part of the E-KICC directive has also been to supply furloughed staff members of any registered charity with access to over 200 online assessments to ensure their skills can be maintained whilst away from the office. EllisKnight International pay the full monthly costs of the assessment programme so that charity staff members receive unlimited access to the online courses free of charge – <https://www.ellisknight.com/ek-charity-charter>

We have just very recently formed a corporate partnership with <https://www.toilettwinning.org> who help bring clean water and safe sanitation to the world's poorest people by linking a work place toilet with a latrine in a developing country. For every candidate placement we now make, we will sponsor a toilet twinning on behalf of the client. For this they receive a framed certificate of the newly twinned latrine and GPS coordinates to place next to the client's staff toilet.

We have developed a fantastic voluntary partnership with Oxford Media & Business School, working closely with their recent graduates and organising work placement opportunities for them with our



clients free of charge. This helps to develop the graduate's confidence by working on their first assignments with exciting organisations we know and trust to support them. We also have plans in place to create an EllisKnight International 'Start Up Shout Out' campaign where we provide a voice for local start up businesses on social media to help promote their work for free.

Each month we will focus on a new business, producing a video introduction with the business owner, introducing their operation to our social media followers and advertising events where they will be exhibiting throughout the month. Their company profile and online links will then be placed on a dedicated page on our EllisKnight website to pledge our continued support.

4. CSR Philanthropic

At EllisKnight International we pride ourselves as passionate fundraisers placing charity at the heart of all we do. We have had the pleasure of organising a host of successful fundraising events in partnership with our clients and our local community to support a number of outstanding charities.

The EK family are also regularly encouraged to take on their own fundraising challenges with company support and sponsorship. In 2015 and 2016 we received Corporate Charity Awards for our fundraising support of Naomi House and Jacksplace based on a 32 hour world record team rowathon we hosted in Reading and a Super Hero Family Fun Day organised by the EK Team at Wasing Park.

Through a range of innovative charity challenges and initiatives, over £40,000 has now been raised to date. Highlight events have included the following:

- Two Super Hero Family Fun Days at Wasing Park and Beale Park raising £5,210 in funds for Naomi House and Jackplace, BIBS and Daisy's Dream. As part of the two events we organised a 1km Super Hero Dash, 5km and 10km running events, market stalls, family games, fully licensed bar and costumed entertainers.
- A seven marathons in seven day challenge where EK Director's Paul and Dave dressed as Vikings whilst carrying a Viking ship for 183 miles across the week, raising £2,112 for Daisy's Dream and Naomi House.
- An indoor Everest Stair Climb where EK Director Dave carried one of his children up 3,707 flights of stairs (the equivalent to the summit height of Mount Everest, raising £2,260 for Naomi House.
- A four time world record breaking static rowing event at the Madjeski Stadium, Reading, involving over twenty clients across a 36 hour period, raising £2,964 for Cancer Research UK.
- A two time world record breaking static rowing event at Festival Place, Basingstoke, raising £2,483 for Help For Heroes, Breast Cancer Now and The Ark Charity
- Two Adventure Challenge events (consisting of a two mile obstacle filled course for primary school children) and a 30 hour rowing marathon, raising £5,689 for Silchester Primary School PTA.
- A world record attempt to run the fastest marathon in a five man Viking ship in Bournemouth, raising £1,183 for Worldwide Cancer Research.
- A world record attempt to run the fastest marathon in a one man Viking ship costume, raising £630 for Breast Cancer Now.
- EK hosted coffee mornings raising £373 for Macmillan Cancer Support.
- A ten hour static bikeathon at Royal Berks Hospital raising £2,256 for the Royal Berks Charity, BIBS and The Stork Fund.

EOS SECURITY LIMITED

BETTER TOMORROW

INTRODUCTION

'Better Tomorrow' is EOS Security Limited. It started with a mindset that security was actually about protecting people and business. To do so however, we thought bigger than just a security service or system, we wanted a single solution to benefit everyone. Our environment and the protection of it is the driving force behind our services. EOS is unique as it is the only UK security company to concentrate, create, provide and manage security solutions based on and around the environment, people and the planet. At EOS we create, deliver and maintain security systems and services, consulting and intelligence based solutions which wrap around our core values of ethical standards, social responsibility, sustainability and the positive impact we can have on our environment.

To achieve this we needed to not only concentrate on getting business but to make sure we continually heightened awareness about the positive impact we could all have on our environment, concentrating on a client base that shared our values, such as the environment, agriculture, renewable energy, communities and people. Planting trees in clients names, using recycled uniform, electronic reporting systems are a few of the steps we take to achieve this.

Marketing was completed in house and each release didn't just concentrate on EOS, but the positive impact we could have together on tomorrow. We selected LinkedIn and Facebook as our medium and on average released a message every single day to get the message out. This resulted in a company, only 8 months old, getting over 700 connections on



our company LinkedIn page and all doing so as they saw and believed in the message.

Feedback has been excellent, the message understood and believed, shared and liked.

We have planted, to date, over 150 trees and shown that we can protect not only our clients but by working together and proactively creating partnerships we can help protect the environment for everyone. We understand that we cannot change the world, but we can change ours, the one that we live in, each day. By continuing in this stance, we are heightening awareness for all, almost every single day by releasing information, news, and tips for all to use, even if you don't want to do business with us. We can't think of a better way to help towards making tomorrow, better than today.

IN DETAIL

I have always had the personal motto of 'make a difference' and dedicated my life towards helping others, through the Royal Navy, Royal Navy Police, Civilian Police and into the security sector. It has driven me and I have been lucky enough to have helped people. Some 18 months ago, I was made redundant after my company was acquired and

found myself a little lost, wanting to find another company that shared my values. Long story cut short, I couldn't find it as everyone seemed intent on profit over service.

I spoke with my long time friend and mentor and he asked me what I was looking for and I explained to him my dream, to find a security company that cared enough to be different, to put the sole purpose of protecting people above all else. He told me it didn't exist, and I should do this myself, which I laughed off. Two weeks later, he died suddenly whilst gardening.



We were now in the midst of our first covid lockdown and my conversation with him came to the forefront of my thoughts. I had a little bit of savings, £1,000, and decided to use this to create EOS, a company that took my motto and the motto 'Better Tomorrow' and joined them. EOS is named after the Greek Goddess of the Dawn, said to have risen each morning to open the gates of heaven and let the sun shine down on the world.

I knew EOS was never going to be big but I knew it could make a difference. I knew that if I created a message of genuine caring about protecting business, people and the environment, all wrapped into one I could make a small difference towards tomorrow, but if I was lucky enough to have others join me in this quest, together our ripples would

make a bigger difference.

Our website, company pages and marketing campaign has been dedicated to not only our security services but the wider message of a better tomorrow for all, with messages and support towards great campaigns and actions by others towards the environment, health, mental health and simply caring about people.

EOS is small and yet we have managed to take a belief and made it our company, shared and promoted our message consistently and gained business whom to date have all seen savings but with heightened site integrity and security.

More so, they have seen and bought into the vision, shared and promoted it themselves. We believe that doing the right thing, making tomorrow better and giving to all is more important than being profitable. The day will come when we leave this world, but by working together now we can ensure that tomorrow is just that little bit better than today, for all.

There is no one else doing this within our industry. We spend more time on heightening awareness of the environment, health and general wellbeing than promoting our services. We accept that we are only taking small steps, but each step is one more than the one before and all lead in the same direction, tomorrow.

Partnership is important to us, our campaign (project) is working.

To give an example, one client we have takes our newsletters which concentrate on spreading the word and share them with all staff. When we attend their locations, the staff stop and speak to us and tell us they think what we are doing is great.



Another company had a vote with their staff to select the types of trees we planted? Talk about sharing the message.

In just eight months we have planted over 150 trees and at the very least, that alone helps the environment for the next 100 years. Talk about a better tomorrow. So how do we continue? Easy, we take tomorrow the same as today, another small step, perhaps another customer who joins us and message, impact and awareness continues.

When we started EOS the first organisation we joined wasn't the Security Industry Authority or the National Security Inspectorate it was the Green Organisation, for this is what mattered most. Our values are what make us different.

EOS is a Bronze member of the Green Organisation and although we want to be Gold, truth is we couldn't afford it. But colour or grade doesn't matter to us, belonging and promoting the message does.

We like being different, we like the path we are on. We have no idea where it will lead but we already know it will make a difference to everyone, for the better.

This for us is one thing we now know about tomorrow. And for us, that is enough.

GALLIFORD TRY INFRASTRUCTURE

LORDSHIP LANE PHASE 1&2

INTRODUCTION

The Lordship Lane Phase 1&2 project was undertaken by Galliford Try Infrastructure on behalf of Stoke City Council who financed the project valued at £100k. The project was procured through the Stoke City Council Minor Works Framework.

The works involved the site clearance and improved construction of an existing footpath/bridleway route between Leek Road and Victoria Road. The scheme

mitigation measures were developed to limit the impact of our construction works, particularly on the Great Crested newts which were identified as being present.

Lordship lane is a footpath of a hard-standing rock/stone and small sections of macadam

ACHIEVEMENTS

This scheme has seen the much-needed transformation of an existing footpath/bridleway. We believe this project, delivered by our talented technical and operational teams, is an outstanding asset and we were delighted to present it to Stoke City Council and to those who will use it for many years to come.

On completion of the scheme the Lordship Lane footway/Bridleway verges were reinstated with topsoil as well as re-landscaping and seeding. The use of Nu-Flex has provided a hard-wearing long life solution, suitable to all non-motorised users.



was delivered in two Phases – Phase 1 comprised of a 525m length between Victoria Road and a footpath link into the St Peters Academy School site. Phase 2 comprised of a 250m length of footpath between the footpath link into St. Peters Academy and Leek Road to the west. The constructed path width is approximately 2.5m, however the area was cleared to approx. 6.5m wide along the route of the path to provide working space and reinstated on completion

The area has been identified as important local habitats for protected reptile species. Thus,

The asset manager and end-users alike will benefit from the following improvements

- Well drained surface due to porosity of the material
- Resistance to slipping due to the type of materials used
- Significant reduction in the effects of ice and snow

- Surface is excellent for horse riders and cyclists
- Environmental benefits- Over 800 recycled tyres have been used to deliver 2000m2 of this innovative surfacing material

IN DETAIL

Environmental Best Practice

Best practice included constructing ecological fencing around the proposed working areas, along with trapping and relocating Great Crested Newts found within the proposed working areas prior to construction works commencing.

Site works are a foot path renovation/improvement scheme. The foot path is over grown and is in requirement of a minor vegetation clearance. This will be a trimming of overhanging branches and hedges/brambles that encroach onto the current footpath. The existing foot path will be created from soil scrape and concrete edgings set in with a stone infill, then nu-phalt surfacing as a top finished surface.

This Pedestrian route will be closed during the works being carried out. There are 2 cross paths that lead onto Lordship lane and these will be closed to pedestrians also, with Heras style panels fixed secure in place.

Materials to be brought to site as required and minimal storage of materials and waste required on site.

Ecology & Protected Species Mitigation and Enhancements

Reptiles

Surveys recorded small numbers of Great Crested Newts and birds principally Wood Pigeons present within the margins and hedgerows along the footpath/bridleway boundary.

Adjacent properties to the south included a retail depot, secondary school site and working quarry. Adjacent properties to the north consisted of Halls of residence owned by Staffordshire University. Ecological grassland was also present. Between the quarry and the proposed footpath improvement scheme Great Crested Newt populations were managed with newt fencing around the areas. Separate Method Statements were made for newts so they were not to be affected by the works.



A specific Method Statement was written and included instruction to all operatives to carryout daily Inspection wildlife awareness checks at each section of work to ensure no newts had entered the work zone overnight and hidden under kerb edges or similar locations

Birds

The footpath/bridleway construction had minimum impact on the surrounding area and retains most of existing foraging and nesting opportunities for birds. Although it was necessary to remove some hedgerows and scrub to facilitate access and infrastructure. The provision of new landscape planting such as seeding will offset any losses and provide additional opportunities for a range of bird species.

We ensured that clearance of any nesting vegetation

was undertaken outside the bird nesting season to avoid any potential offence or disturbance.

Bridleway/Footpath construction

We were tasked with creating a much-needed improved footpath/bridleway and multiuser trail that is suitable for all user groups within the local community including cyclists, pedestrians and horse riders.

The foot path was over grown and required minor vegetation clearance. This was trimming of overhanging branches and hedges/brambles that encroached onto the current footpath. The existing foot path was created from soil scrape and concrete edgings set in with a stone infill, then nu-phalt surfacing as a top finished surface.



The traditional response is to use either crushed, compacted stone or bitmac, but both can be problematic in terms of maintenance and suitability for different user groups. Equestrian users particularly object to bitmac.

Thus, we decided to use Granulated SBR (Styrene Butadiene Rubber)

Our approved supplier nu-phalt with their product 'nu-flex' proved to be the most thoroughly tested, developed and cost-effective solution.

'nu-flex' is an innovative surfacing material, blending recycled rubber with aggregate and a polyurethane binder. It is dynamically different from traditional bound materials and offers significant benefits including;

- Resistance to rutting, defects and hazards
- Durability, flexibility and grip
- Environmentally friendly
- Very low maintenance

It is cold-laid by hand and provides a smooth, easy-to-use surface with plenty of grip. Due to the rubber content, it has an amount of give in it (loved by local running clubs), and is also porous which means no puddles, very little spray when cycling in the wet and no sheet ice.

The de-vegetation and tree canopy clearance were carried out in advance of the footpath construction works.

THE INCREDIBLE HUSK INTERNATIONAL GROUP

INCREDIBLE HUSK

AIM

The Incredible Husk International Group (IHIG) was formed to develop new and innovative biodegradable material to replace harmful plastic and bio-plastic material.

We take the waste from crops, currently dumped, burnt, or buried and turn them into new biodegradable commercial materials, which can be used to produce a huge variety of products. At the end of products' useful life, they can be used as fertiliser (see IHIG Circle of life cycle)

Plastic is destroying flora and fauna on land and in water with almost 9 million tons of it entering our oceans each year – ultimately, if we do not protect our planet and its ecosystem, much of the life on our planet will not survive.

IN DETAIL

Currently, less than 9% of plastic gets recycled, much of the rest pollutes the environment or, sits in landfills where it can take up to 500 years to



decompose whilst leaching releasing harmful toxic PAH chemicals into the atmosphere, poisoning the ecosystem and contributing to the many cancers that are killing humans and animals.

The difficulties and expense of repurposing waste plastic make it uncompetitive because producing new plastic is so cheap

There is another way – The Incredible Husk International Group was formed to deliver innovative new biodegradable material solutions and replace this harmful plastic and bioplastics and reduce climate change.

IHIG Partnerships - Designs - Develops and Delivers

IHIG's experience and expertise in waste materials and our developing partnerships and collaboration with material sector specialists and environmental groups mean that we are building on our sector expertise, becoming the subject matter expert and 'go-to' group on what can be done with waste materials around the world.



What are the limitations of what can be produced? This new material has the flexibility, properties and tolerances to be used across a huge range of markets and products.

Now, here's the clever bit when the product reaches the end of its useful life? Just break it up and use it as fertiliser– it really does increase crop yields!

IHIG Biodegradable Materials Recipes and Product Testing

All biodegradable Materials Recipes and Products have been tested and are compliant with the following requirements listed below:



Project Achievements:

- Obtained a world IP
- Developed a new 100% biodegradable husk compressed material recipe
- Developed a new 100% biodegradable husk injection moulding material recipe.
- Developed a new mixed recycled plastic and biodegradable husk material recipe

Key benefits

- Natural material
- Offset CO2 by upcycling wasted husk material to avoid burning
- Low energy consumption compared with plastic and metal
- Low water consumption compared with plastic and metal
- Only natural substance washed into the drainage system
- Anti-bacterial - does not grow mould the alignment of the material molecules does not trap water.
- Biodegradable – naturally composts.
- Becomes a fertilizer at the end of product life to give to farmers to grow new crops.

| IHIG ECO Material Comparison Chart | | | | | | | | |
|------------------------------------|-------------|---------------|-----------------------|------------|------------------|-------------|------------------------|---------------|
| Material | Zero Carbon | Natural Waste | Natural Biodegradable | Recyclable | Renewable Source | Compostable | End of Life Fertiliser | Contain PAH's |
| IHIG ECO | YES | YES | YES | YES | YES | YES | YES | NO |
| PLA - Bio Plastic | NO | NO | YES | YES | YES | YES | NO | NO |
| PET - Bio Plastic | NO | NO | NO | YES | NO | NO | NO | YES |
| Plastic | NO | NO | NO | YES | NO | NO | NO | YES |
| Wood | NO | NO | YES | YES | YES | NO | NO | NO |
| Paper | NO | NO | YES | YES | YES | YES | NO | NO |
| Cardboard | NO | NO | YES | YES | YES | YES | NO | NO |
| Metal | NO | NO | NO | YES | NO | NO | NO | NO |
| Glass | NO | NO | NO | YES | NO | NO | NO | NO |

INTERNATIONAL BANK OF AZERBAIJAN AN E-COMMERCE INFRASTRUCTURE

INTRODUCTION

The International Bank of Azerbaijan is the largest financial institution both in the Republic of Azerbaijan and the Caucasus region. By developing its e-commerce infrastructure and introduction of innovative card products and worldwide services and privileges to the Bank's customers, the IBA tries to promote the expansion of non-cash payments in Azerbaijan.

The bank, which main stakeholder is the government of Azerbaijan, has a diversified branch network across the country, which consists of 37 branches and 39 sub-branches. The Bank has also the largest corporate segment in the banking sector of the country, serving the biggest enterprises in oil & gas, transportation, manufacturing, trade, services, telecommunications and etc.

In 2017 the Bank has undergone the largest restructuring process in the modern history of Azerbaijan. Notwithstanding the financial difficulties the Bank faced during the last years and financial recovery process, the International Bank of Azerbaijan held numerous CSR initiatives.

The Bank's main goals are to increase financial literacy among population and impact on social welfare. The Bank holds ongoing projects that include expand introduction of FinTech in Azerbaijan, support of the social activity of young people, encourage financial literacy of wide audience through local FM channels, tighten relations within local journalist society, promote investigations of Azerbaijan's history, provide effective, productive and equal learning environment by converting traditional books in Azerbaijani language to audio-books.

IN DETAIL

IBA Tech Academy is an educational initiative of International Bank of Azerbaijan based on the methodology developed by center for training of IT professionals «DAN IT education». The education program is based on the Israeli method for training IT-personnel – Telem. IBA Tech Academy is established within the framework of the "International Bank of Azerbaijan"'s corporate social responsibility strategy.

Our students



Front-end developers



Event for ABB Tech Academy

IBA Tech Academy's mission is to develop the Azerbaijani IT market in accordance with technology of the future to achieve technological breakthroughs through cultivating new generation of professionals.

There is no tuition fee for participation in the program. The Academy is open for everyone who wants to try out programming. It is a great opportunity even for applicants who have never coded before to build a successful future career as a programmer.

Currently, Azerbaijani IT sector is seeing a rapid growth. Seize the moment exploring the world of tech to be the first to pave the way to a highly-paid and promising profession of the future. The Academy provides immersive bootcamp programs covering main areas of coding. Applicants thriving to develop necessary competencies for programming to build their future career in IT industry can be enrolled to the program through successfully completing 4 stages of selection process.

The first admission to the academy began on September 9, 2019. We received over 7,000 applications, of which 112 were selected and

received the opportunity to study. The graduates who showed the highest results received the opportunity to get a job at the International Bank of Azerbaijan. Thus, the Bank provided jobs for over 50 graduates of the Academy. Due to the high interest among the country's youth in studying at the Academy, the second enroll was announced on December 30, 2019. As soon as the selection process had ended, 114 students were enrolled to the Academy. They are currently continuing their studies. The third enroll has also been announced on January 24, 2020 and now the selection process continues.

After completion of immersive bootcamp program the participants will:

1. obtain a new profession in 3 months during intensive studies
2. get a full stack of skills in one of areas
3. be able to create an attractive portfolio and a CV for potential employers
4. tune self-presentation and project showcase skills



Honor certificate

Students who complete the course with high results receive a certificate of distinction.



Standard certificate

Students who complete the course receive a standard certificate

5. gain self-confidence and improve soft-skills
6. learn about international experience, well-known companies cases, receive practical advice for their future career
7. have a chance to get a job from IBA (for top performers)

Courses provided at IBA Tech Academy:

• **Cyber Security & Sysadmin**

The course program is designed on the base of real-life examples to learn how to administer OS Windows and Linux to counter the attack threads in the most efficient and timely manner. After 250 hours, students will completely master the basics of network management and, together with our career managers, each student will be trained for interviews. Also, course participants will have an option to pass for Microsoft, CISCO Certification at the end of the course.

• **Data Analytics**

The program modules cover important topics sequentially, ranging from server databases and maintenance to concepts of data warehouses and basic reporting tools. The Data Analytics course is integrated into the modern world of Data Analysis and fully prepares the student for market challenges in the next 5 years. Upon successful completion of the program, the student will receive all the necessary tools to enter the world of Information Technology as a specialist in Business Analytics being able to process large amounts of data and present the results to business representatives.

• **Frontend**

Program consists of 5 modules, during which students attend workshops, including BackEnd basics on using NodeJS, Mobile App, Business Intelligence. Students will be taught to undertake the difficult tasks both individually and in groups. All graduates will get a chance to present their acquired skills by means of projects showcase. Students will gain experience and self-presentation skills.

• **Backend**

The program includes the “Algorithms” module, which is taught only in specialized universities. As a result, our graduates will obtain programming languages, frameworks and their derivatives such as Spring and Hibernate, gain knowledge of databases and will be able to create full-fledged server systems and projects.

• **Mobile App Development**

The Mobile App Development course is designed specifically for those who not only want to learn how to work with technology, but also be a specialist in an intensively growing field. The course students will deal with the react-stack, learn how to create mobile applications for iOS and Android. We recommend the course to those who want to get an experience as a react-native developer and start building their impressive portfolio of real-life examples of work.

For more information about IBA Tech Academy:
<https://ibatech.az/en/>

LEARNING POOL

E-LEARNING

INTRODUCTION

Learning Pool (LP) believes better informed people power the most effective businesses. We take a fresh approach to partnering with customers. One that makes a real difference, with a 98% customer recommendation rate.

Learning Pool is a full-service e-learning provider, offering award-winning service (alongside pioneering technology and creative custom content solutions) to 5.1million learners, speaking 42 languages, in 30 countries – with 96% customer retention for the last ten years. Launched in 2006, we’ve grown from five staff, servicing the UK public sector, to an e-learning industry leader, with 260 people in eight offices (UK and US).

Our unflinching objective is to deliver first-class customer service and satisfaction; our collaborative, relationship-based approach produces outstanding long-term results and satisfaction.

Ambitions centre around providing stellar care to our 1000+ global clients, driving continuous innovation through our product set, and nurturing our team.

Over the last few years, we’ve designed, implemented, and embedded an ambitious employee engagement, support and CSR strategy, championed from the top-down and bottom-up.

We’ve developed, delivered, measured, and continue to expand our suite of offerings, providing a plethora of services and programmes supporting our business, our people, and our communities.

Highlights include:

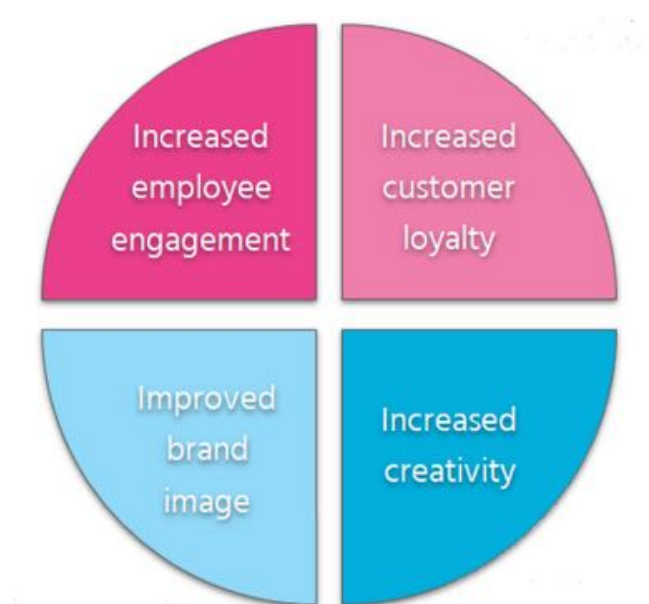
Continual charitable and community support and engagement.

Five-year strategic CSR plan.

Embedded employee wellbeing.

Our programmes are supporting business goals, while also delivering exceptional employee support and corporate social responsibility.

Most importantly, our employees are empowered and engaged. Our latest employee engagement survey (November-2020) reveals a staggering 90% of employees agree: “Learning Pool has a strong social conscience” and “Learning Pool is run on strong values and principles”.



IN DETAIL

At Learning Pool, we’re passionate about our people, and serious about our responsibility to make the world a better place. But we know higher participation rates in CSR programmes come from having a broad employee engagement strategy, rather than just a CSR strategy. It’s the inclusive focus on the employee first, and their relationship

with the company. It's not just communicating about the CSR efforts, but creating comprehensive initiatives that drive employee activation, learning, and participation – so that's what we've set out to do; drive employee engagement and wellbeing to deliver our CSR strategy and in turn deliver £1million in equivalent value to our communities over the next five years.

Core Values

Our three core values shape how we do business, and who we are as a company – these are echoed from top down and bottom up. They're also the reason 98% of our customers recommend us.

Our senior team's (SMT) guidance has a direct impact on our culture, and their commitment is inextricably linked to our success.

This year has been tricky; the obvious pandemic enforced changes, plus we acquired two new businesses (UK and US). The SMT have navigated us through these trials with confidence, an always-open virtual door policy, and close working relationships with all staff. This approach helps us all to work together and strive for our ambitious targets.

Our values ensure we continually grow as a business and culture. We've grown as a great place to work because of our values:

We've got your back: Looking after customers and each other beyond a contract or time of day. For staff, this means no one earns below living wage, and we support family-friendly hours, including flexible working to support all staff.

Let's build to grow: Leading by example, the SMT consistently drives the business forward with

new ideas and great initiatives, saving both time and money.

Do the right thing: Everyone, including the SMT, are fully committed to CSR activities and charity work.

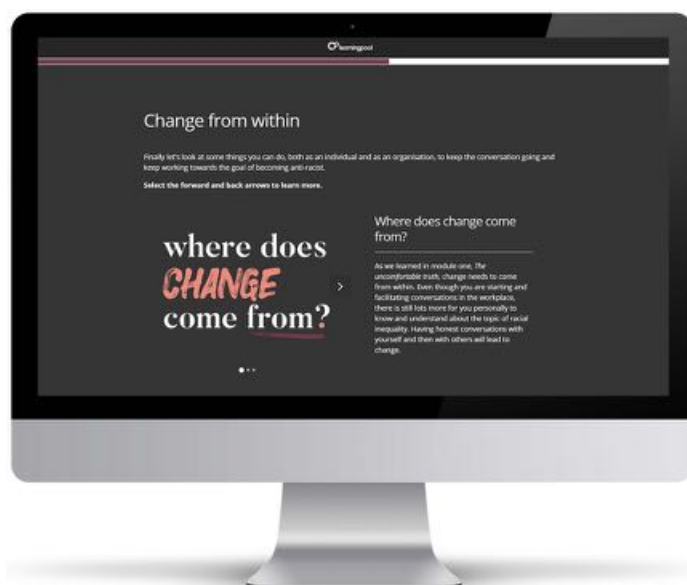
Research and understanding

The foundation of our plan and subsequent actions were based on the following research:

Engaged employees gain motivation and pride in their work, building a strong employer brand and allowing us to recruit, grow, and retain the best people. Companies with highly engaged employees saw 21% better business profitability. (Clearview)

56% of people said: "a brand being known for its social value" was a top purchasing driver. And 53% said: "a brand with community commitment" was a leading purchasing driver. (Nielsen)

CSR initiatives encourage employees to try new things and stay engaged at work. Through social involvement, employees come up with new ideas about products and processes, and they innovate new problem-solving solutions. (Employee Benefits)



Focus areas

The engagement and wellbeing of our employees underpins our CSR and business goals. To give everyone clear direction and focus, we devised our five-year CSR strategy.

Our strategic focus areas are to:

Engage, support, and inspire our I team to retain and evolve our culture of contribution.

Use our unique capabilities to support good causes.

Improve Learning Pool's CSR profile among peers, customers, and the wider industry.

Regularly review our charity selection to maximise our overall contribution, and balance individual interest areas with those of the company.

To achieve these aims, we continue to:

Embed CSR in day-to-day operations.

Broaden involvement in CSR across the team.

Improve our profile as a pathfinder in CSR.

Find new and innovative ways of contributing (not just financially).

Improve measurement and impact.

Focus on young people to create a pipeline of future talent.

Build a partnership model with customers around issues we believe in.

To balance our charitable focus, we've adopted a three-tier approach as follows:

Tier one – strategic CSR partner

A long-term relationship with a global or national good cause meaningful to our team and the business. This is the primary focus of our CSR efforts and will be decided annually, but may run to several years of relationships.

Tier two – charities of choice

A selection of charities close to our hearts. These consist of those that have a direct impact on one or more of the team that we want to support as only we can through the provision of financial support, volunteering, our services, or our products. These will be under continuous review at monthly meetings.

Tier three – CSR awareness

An annual internal and external calendar of events and programmes, in line with our beliefs and values. These could be financial, sharing knowledge and experiences, plus learning internally and externally.

Our vision

Every year, our dedicated CSR team works together to improve society by putting our wide product and solution range to good use in partnership with many different organisations. We take the same approach to our CSR objectives as we take in working with our 1000+ customers around the world, creating a respected, open, and transparent relationship everyone trusts to do the right thing.

Through donating countless hours to the community, and consistent fundraising efforts, we embrace our chance to help others, and use our resources and skills to impact education, the environment, and a wealth of charities.

During the pandemic, we've worked with mental health and wellbeing charities to spread wellbeing and mindfulness support, especially with the added pressures of the season and how dark days and bad light can affect wellbeing. Our blogs and support shared information on contact for Samaritans, Mind, and The Wellbeing Foundation.

Raising awareness for important issues is high on our list of priorities. We've made some of our topical modules available completely free forever.

Each year, we ask the Learning Pool team to vote for charities to support. During the last year our chosen good causes have been:

AWARE NI – depression charity for Northern Ireland.

Rainbows Hospice – East Midlands’ only hospice dedicated to long-term and terminal care for children and their families.

My Name’s Doddie – a foundation raising funds to aid research into motor neurone disease.

Despite restrictions to our normal volunteering and face-to-face charity activity, we still donated £62,945 to our chosen charities in 2020.

Our employees give their time and efforts to multiple activities and causes. In the last year, alongside our three chosen charities above, we’ve also supported:

BITC’s Time to Read programme – supporting primary school children with a year’s partnership, focusing on the development of literacy and numeracy skills to help build confidence and self-esteem.

Girls in ICT – leading virtual taster sessions with girls in information and communications technology.

Bigger picture

At Learning Pool, we’re committed to behaving ethically, focusing on our local communities, and strongly on continuous development of environmental initiatives to reduce our carbon footprint.

As an online business, we already empower our customers to help create a more sustainable world by using our technology. We

take a proactive approach to being a responsible business, and we know we have a responsibility to the environment beyond legal and regulatory requirements.

We do this by:

- Being committed to reducing our environmental impact and improving our environmental performance as an integral part of our business strategy and operating methods, with regular review points.
- Encouraging customers, suppliers, and other stakeholders to do the same.
- Continually improving and monitoring environmental performance, and improving and reducing environmental impacts.
- Incorporating environmental factors into all our business decisions.
- Increasing awareness of this initiative throughout the team, with regular communication and company initiatives.

Bravery and conviction

We’re not afraid to initiate and encourage difficult conversations. In response to the tragic events in



America that saw the murder of George Floyd and the rise of Black Lives Matter, we created some very delicate yet thought-provoking content – for use both internally as a business, but also offered free of charge to our clients.

Working with subject experts, we created both discussion tools and training covering topics to encourage listening and reflection, ultimately making a difference. These modules were:

The Uncomfortable Truth.

The Uncomfortable Conversation.

Free modules, forever

Raising awareness for important issues is high on our list of priorities. We've made some of our topical modules available completely free on our website – forever. These are accessible to all, not just clients, so individuals and organisations can access important information as and when they need it.

The modules cover:

Climate change.

Modern slavery.

Stress awareness.

Mental health awareness.

Suicide prevention awareness.

In the last year, we've created free content for COVID-19 support, including working from home guides, introduction to mindfulness, and dealing with stress as an example.

Empowering employees and their wellbeing

Our employees are at the heart of everything we do. Their wellbeing is key for our continued business success, and our ongoing CSR support.

We've recently introduced a new wellbeing channel in our internal site, 'Google Currents', and

encouraged the team to join and add inspirational quotes, pictures, and any tips or techniques to help each other manage through this latest period of lockdown.

Learning Pool also has a new 'Sports and Social Club', which has been introduced in the last year to a fantastic response from the team. Activities that kept us invigorated during lockdown include a company-wide virtual escape room, current Super Bowl competition, cook-along experience with a chef, and the Haka Experience – a one-hour workshop teaching the haka.

Most recently, we're in the middle of a virtual fitness challenge, 'From Derry to Denver'. Almost half our global team have signed up to our Fitness Club on Strava, with an aim to run, swim, cycle, or walk our way virtually across the globe.

Supporting employees globally during COVID-19

The safety of our people and their families is of primary importance to us, even more so during the pandemic.

- We supported our employees by taking the following steps to ensure all our people and their families were able to work safely and effectively during the pandemic:
- All staff were sent home before the official Government advice and lockdowns.
- All travel was cancelled to help protect our people and their families.
- Regular updates and communication were given from the CEO and SMT to all teams, including vlogs and blogs, offering reassurance and support throughout the year.
- "Home Office" funds were set up to allow everyone to access money for desks, chairs, etc.
- Controlled access was provided to offices to take any equipment needed.

- COVID-safe officers were instilled to manage offices, manage a timetable for staff who needed to be in, and provide masks, hand sanitiser, etc.
- An additional 'Learning Pool Bank Holiday' day off was given so everyone had an extra day to take time out.
- Our flexible working policy was introduced.
- A 'do your best' message was promoted from the SMT – no pressure to be 'always on'.
- There were no pay reductions, furlough, etc. – no matter how little they were able to do.
- There was a family approach, supporting all staff in need – we even arranged online food shops for three team members who were really struggling.
- Christmas hampers were provided for everyone in place of a get-together to raise morale.
- Kids Christmas cards and gifts were sent out.
- A vaccination day off was announced.
- We ran a number of internal 'how are you doing' surveys. From these, 42 people put their hand up to say they were not coping well, therefore we appointed 'HR Sponsors' to work closely with each of them to have regular check-ins and support.

Making a difference

At Learning Pool, we care about our staff, the communities, and our environment, continually striving to make a positive contribution through CSR activity. Through being brave, and engaging internally and externally, we'll return £1million in equivalent value to our communities over the next five years.

MEDIA SMART

SMART PHONE AWARENESS FOR CHILDREN

INTRODUCTION

It's not new news that UK children are spending an increasing amount of time watching and interacting with screens, exposed to more advertising messages than ever before, often unseen by guardians. Amongst kids as young as 8 to 11, a third already own a smartphone, half use them to go online and half are allowed to take their phone to bed with them. For 12 to 15 year olds, those numbers reach as high as 83%. What fewer people know about is the work by the advertising industry, underway since 2002, through the not-for-profit Media Smart, to help young people aged 7 to 16 to navigate this ever more complex world of advertising. The Media Smart programme provides free teaching resources and parent & guardian guides on subjects like social media, digital advertising, body image and influencer marketing which are delivered in the classroom, assembly, youth club or at home.

Since 2014, Media Smart has grown its supporter base by over 50%, enabling the not-for-profit to create new educational resources including the Boys' Biggest Conversation Campaign & a ground-breaking Influencer Marketing Campaign. Over that time, Media Smart resources have been downloaded across the UK over 63,000 times, directly reaching an estimated half a million plus young people. Ultimately, Media Smart is about building media and

digital literacy in young people, resulting in greater emotional resilience and wellbeing.

Positive Media Smart momentum means there are an unprecedented three new educational resources planned for 2020 covering healthy eating, piracy and data protection, as well as the roll out of the Boys' Biggest Conversation into film format in cinemas this spring.

IN DETAIL

Background & Programme Resources:

"As parents, our children are more savvy with technology, it is good to have resources/materials to reference to when busting myths with them. Otherwise they think they know it all." (feedback from Hunadi on the Media Smart Facebook Page in 2018).

Media Smart works with its 31 advertising industry partners and a panel of experts (see appendix 'Supporters & Panel' for full details) to focus resources on areas of greatest need in media literacy and to craft the most powerful and meaningful content.

Media Smart now has six different modules available for teachers to use which are targeted and tailored specifically to either primary or secondary school



31 Media Smart Industry Supporters



ages. For primary schools, three resources cover an introduction to advertising, digital advertising & body image. For secondary schools, resources cover the topics of body image & advertising, social media and, as of 2019, influencer marketing. Materials are also available for parents on the topics of body image, digital advertising and social media. See Appendix labelled 'Resources in Action' for photos of the resources in use in school classrooms.

Media Smart's Body Image & Advertising resources for Primary and Secondary schools have both been PSHE accredited. "Our Quality Mark is awarded to resources that meet our ten principles of effective PSHE education. Resources are rigorously assessed by one of our subject leads and if successful recommended to our community of PSHE education professionals." (PSHE website)

Following the 2016 Credos Research 'Picture of Health' highlighting the pressure on boys in secondary school to look good, Media Smart developed the Boys' Biggest Conversation Campaign, encouraging young men to talk about body image and the effect it has on their mental well-being. This is one of the most downloaded

Media Smart resources. The Boys' Biggest Conversation Campaign aims to encourage young men, across the UK, to talk about body image and the effect it can have on mental well-being. The campaign was co-developed with First News and kick-started an on-going partnership with the title which is read by 2.2 million young people and subscribed to by over half of UK schools. The 15-minute film features youth psychologist Emma Kenny and TV doctor and youth specialist Dr Ranj. "This is such an important message and I think it should be on TV adverts every day all day. It was hard for me 25 years ago and we didn't have half as much 'perfect body image' everywhere as we have in our society right now..." (feedback from Zuzana on the Media Smart Facebook Page in 2018).

The continuing rapid growth of influencer marketing led Media Smart to focus its 2019 resources on this integrated and nuanced element of advertising. By 2022 brands are forecast to invest up to \$15bn in influencer marketing. Credos research highlighted this need with 74% of parents saying industry has a critical role to play in helping educate young people about influencer marketing. This new 2019 educational campaign is aimed at helping young



people understand the commercial link between social influencers and the brands they may be promoting. It is the first of its kind to tackle this area of marketing. Messaging is delivered by a well-known and diverse mix of youth influencers who volunteered their time to create short educational videos (to give you a flavour, a two minute video can be viewed on Youtube at https://youtu.be/O_DvOrd-zCI). Also see appendix for the First News article covering the launch of this new campaign.

Reach & Scale:

Over the past five years, Media Smart resources have been downloaded across the UK over 63,000 times, directly reaching over half a million young people (estimate calculated by EdComs – an education expert organisation, partner to Media Smart). Downloads for the second half of 2019 were up by 27% on previous periods. On average 325 people visit the Media Smart website every day, looking for educational resources, and look at an average of three web pages per visit.

With limited budgets, in-kind industry support has been critical to give the programme scale and

reach. Media Smart has been awarded \$10,000 monthly in-kind advertising from the Google Ad Grants programme for non-profits, which have been seen by over 1.1million people with over 110,000 of these going on to Media Smart's website. Similarly, \$10,000 annual in-kind advertising from Facebook has helped reach 640,000 people and led to over 21,000 views of the website.

Parents feedback that social media is their preferred channel to hear from Media Smart. In two years, Facebook followers have grown from 500 to 50,000 and website referrals have increased by 180%. Media Smart also now has over 3,000 Twitter followers and an engagement rate which has increased by over 100%.

Media Smart has built cross-party political support engaging MPs and MSPs to act as ambassadors for the programme. Media Smart runs regular events and exhibitions in Westminster and Holyrood. In 2019 the team held a screening event at Portcullis House of its boys' body image film and a roundtable event is scheduled at Westminster on influencer marketing in May 2020.

Results & Impact:

In 2018, Media Smart conducted research with 60 teachers and 30 parents from its registered teacher & parent user base.

Teacher feedback demonstrated how the resources are positively impacting young people's media and digital literacy skills:

- 84% feel they are better equipped to teach about advertising and the media
- 81% feel more confident that their students are better at interpreting advertising and the media
- 90% feel that they help them to deliver the curriculum and wellbeing topics

1 in 4 teachers reported they use the Media Smart resources at least once a month and 1 in 2 teachers said they use them at least twice a year.

Parents felt similarly confident in the positive impact of the resources on their children. 97% of parents surveyed said they felt 'better equipped to help children to interpret and understand adverts' and 91% said they felt 'more confident that their children had a better understanding of advertising and the media'.

9 in 10 parents & teachers reported that they would recommend Media Smart resources to others.

"At Calder High School we run Learning for Life Days (L4L Days) to deliver our PSHE curriculum and have used the Body Image lesson with Year 10 students - both boys and girls. The resources were excellent and we were able to adapt them slightly to suit our 60 minute lesson. All 181 students found the lesson very interesting and thought provoking with the video clip promoting much discussion. Teachers were able to pick up the lesson with minimal preparation and deliver effectively and in an interesting manner. An excellent resource which we are demonstrating at the eHNA (electronic Health Needs Assessment) Conference in early July to Secondary Schools in Calderdale." Jan Healey

Scalability:

Media Smart started out with five industry supporters in 2002, growing to 20 by 2014 and has grown by a further 50% since then to now stand at 31 industry supporters. It is central to Media Smart's success that it continues to drive this virtuous circle of delivering social impact with young people to prove its benefit to then on-board more industry partners and further fuel its reach and resources.

2020 will see the continued promotion of current Media Smart resources and campaigns. Specifically, through in-kind advertising from supporters Pearl & Dean, the Boys' Biggest Conversation film has been adapted to an advert, and will be shown in cinemas around the country, for the first time, this spring.

Media Smart is already busy implementing ambitious plans for 2020 campaigns to continue its mission to ensure that every child in the UK can confidently navigate the media they consume:

- In partnership with ITV, in 2020, Media Smart will be taking the industry backed 'Eat Them To Defeat Them' campaign into secondary schools with an original approach to engagement, asking pupils to respond to a creative brief for the campaign. This aims to deliver positive impact around healthy eating and encourage young people to pursue creative careers.
- With support from the European Interactive Digital Advertising Alliance (EDAA), Media Smart will launch an animated film-based resource focusing on data protection and privacy, aligned to PSHE & Computing curriculums, piloting first in the UK in October, with a subsequent European roll-out.
- Working with The Industry Trust, Sky, the Motion Picture Association & Intellectual Property Office, Media Smart will launch new 2020 resources focusing on Intellectual Property and why piracy matters in July, aligned to the PSHE & Media curriculums and designed to be played out on partner channels.

NORTHUMBRIA HEALTHCARE NHS FOUNDATION TRUST REHABILITATION

INTRODUCTION

It is known that across the world 430 million people require rehabilitation to address their 'disabling' hearing loss.

In the UK this equates to 1.2 million people.

Healthcare services are vitally important in delivering care to people with hearing loss in terms of treatment and provision of aids to improve hearing ability.

At Northumbria HealthCare, the NHS trust covers a large area of 500 square miles in the north of England and serves a population of 500,000 people. In 2019 the trust took a bold step forward to improve communications with patients who have hearing loss by appointing a dedicated D/deaf Awareness project officer to make staff aware of the challenges faced by patients accessing healthcare services.

As the coronavirus pandemic began this became even more urgent as face masks were routinely worn by healthcare staff making it impossible for people with hearing loss to lip read.

A member of existing trust staff, Margaret Robertson, was appointed to share with staff her lived-experience as a mum of twins (one who is hearing, and one who is deaf) to raise awareness of the many ways in which communication with patients could be improved.

Once the training programme began it proved to be very popular. More than 1000 staff have received training so far.

This new role has undoubtedly raised the profile of hearing loss and what it entails in its many

forms. It has captured the attention and support of the trust's staff, who are now asking for more detailed training courses so they can give the best experience possible to their patients. This has led to so many other improvements to the way that the trust, welcomes, supports and communicates with our patients who have hearing loss. We hope this approach will be adopted more widely across healthcare providers to ensure equality of access and service for the D/deaf community.



IN DETAIL

It is thought that by 2050 over 700 million people – or one in every ten people – in the world will have disabling hearing loss. This means that potentially one in six patients arriving at hospitals and clinics

across the world will have difficulty in obtaining the information they need about their health because the facilities are not there to help them.

It is worrying to think of the many vulnerable people who are unable to understand what their doctor is saying in order to make decisions about their treatment and care. And yet across the world, this becomes a daily challenge for people with hearing loss.

In the UK, Northumbria Healthcare NHS Foundation Trust always aims to provide the best possible healthcare services for its patients and often looks to innovative ways to address health inequalities. The healthcare trust covers an area of 500 square miles and a population of 500,000 people, many of whom have hearing loss. In order to continuously improve the service on offer to these patients, the trust developed a D/deaf awareness programme which paved the way for staff to learn valuable skills to communicate with people living with hearing loss.

The trust's core values encourage our staff to show compassion, empathy and respect to enable patients to be included in every discussion made about their healthcare. This often causes a lot of challenges for patients with hearing loss, especially if they have not been able to consent to treatment because they could not easily access the information that they needed to make the decision.

Whilst healthcare staff are required to attain and maintain many national training standards, as set by national governing bodies, there is also an opportunity to be more proactive and develop a variety of programmes and initiatives that provide additional support and opportunities for staff development.

Over a period of one year, between 2018-19, more than 1000 staff attended specialist D/deaf awareness training courses to improve communication methods for staff who interact with patients who are profoundly Deaf or have a hearing loss.

It became clear very quickly that the staff were keen to learn about the challenges that D/deaf patients and staff face. They embraced the training and recommended the course to their colleagues. As senior staff became involved a number of requests were made to develop bespoke service -specific training courses so that staff could communicate important messages particular to their service area.

Initially classes were designed to explain the difference between patients that are 100% Deaf, Children of Deaf Adults (CODAS) whose first language is British Sign Language (BSL), D/deaf children who are born to hearing parents and patients with hearing loss. Their needs are very different. Staff learnt how to sign the alphabet and



their names and how to hold a conversation with a D/deaf patient.

As demand for the training grew, more than 45 bespoke sessions have subsequently been developed and delivered to a number of staff groups from both clinical and non-clinical roles, including Midwives and anaesthetists to receptionists and catering staff. The trust's junior doctor programme also includes this training.

During the pressures of the Covid pandemic, many staff took annual leave to be able to attend the training as they recognised how difficult the pandemic has been for everyone, especially our patients that are Deaf as they are unable to lip read because all healthcare professionals have worn masks over their mouths.

Feedback from the programme has shown that staff feel more confident about interacting with D/deaf patients because of the knowledge that they have obtained from the training. Most importantly, they have some insight into the challenges that their patients face and are therefore able to adapt their communication methods to support them. This means that both staff and patients have a better experience. Staff who have completed the training are provided with a badge depicting signing hands that can be worn with their uniform. Often members of staff who pass each other on the corridor and see the badges have a brief greeting in sign language as they pass each other. There has also been a lot of positive feedback from staff when they have been able to use their new knowledge and skills to assist a patient with hearing loss.

The trust's trainer, Margaret Robertson is herself the mother of twins, one who is deaf and one who is hearing. This provided her with the benefit of personal experience to bring to the training delivered to staff so that they could understand how hearing loss impacts on the whole family. She is also qualified as an instructor in British Sign Language and is able to teach key phrases of greeting to make patients feel more relaxed.

The programme has expanded to also provide support for staff who have hearing issues. Arrangements have been made for D/deaf awareness sessions with managers so that everyone understands the issues faced and everyone is able to ask questions in a safe space to reduce the chances of embarrassment for both hearing and D/deaf staff.

Special cards were produced for both staff and patients that they could show to others to make them aware that they had a hearing issue. One side of the card explains that the person is profoundly Deaf and needs an interpreter. The other side of the card explains that the person has a hearing loss.

Outside the organisation, the trust has been able to link with Jo Milne, a leading advocate who raises awareness of Usher Syndrome, which is the leading cause of deaf-blindness across the world. The trust provided support to promote Usher Awareness Day on 2nd March 2021 and is now working to develop a training video for healthcare professionals so that they can better understand the condition. It is hoped that the video can also be used as part of the medical undergraduate curriculum in the UK.

Since Margaret approached the trust to become an advocate for the D/deaf so many positive changes have been implemented to improve access to information and support. The D/deaf Awareness programme has become an integral part of the trust's training offer. Most importantly it is reaping many benefits for our D/deaf patients.



Northumbria Healthcare

NHS Foundation Trust

**Proud to support our communities in
Northumberland and North Tyneside,
in the north of England by:**

Using the arts to improve health and wellbeing

Expanding our volunteering programme to include
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Enabling our healthcare professionals to develop
important global health knowledge through our
Tanzania Partnership, whilst supporting health
service development in the north of Tanzania

www.northumbria.nhs.uk

Email: Brenda.longstaff@northumbria.nhs.uk

NOVATI & AZZURRI RECYCLING REVOLUTION

INTRODUCTION

Azzurri Restaurants Limited can be found at nearly 300 locations across the UK. They specialise in Italian cuisine and operate some of the UK's best-known brands including ASK Italian, Zizzi and Coco di Mama. The group employs nearly 6,000 people, serving over 15 million meals a year in its growing estate of nearly 300 restaurants. Some are located in shopping centres, but Azzurri has direct control for waste management and works with Novati at 194 restaurants.

In 2017 Azzurri was already recycling or recovering 98% of all waste they generated. However, their supplier was failing to provide further innovation to support Azzurri's aspiration of achieving "Zero Landfill". In April 2018 Azzurri took the decision to change

suppliers and to work with Novati with the express goal of achieving "Zero Landfill" as soon as possible.

Our project was designed to create a clear plan to review service specifications, site specific requirements and to propose and implement changes that would achieve the goal and to gain a greater understanding of the waste volumes being generated. Novati committed to audit all sites prior to mobilisation to identify improvement opportunities that would focus on optimising, rationalising & minimising the service specifications at each site.

A robust waste management strategy and out-of-the-box circular economy solutions led Azzurri and Novati to achieve a landfill diversion rate of 99.33%, exceeding the 99% national threshold for Zero Waste to Landfill. Azzurri is one of the leading casual



dining sector restaurant chains and is one of the first to achieve these fantastic statistics. Through their work with the Sustainable Restaurant Association Azzurri hopes to pave the way for other businesses to rethink their own waste management

Not only has Azzurri achieved “Zero Landfill”, they also recycle 80% of all waste they generate. Through the audit programme designed to optimise, rationalise and minimise service solutions they have also been able to remove more than 13,000 lifts per annum from their service schedule. This has created a significant financial benefit to Azzurri but also reduces the carbon footprint associated with sending vehicles to restaurants where collections weren’t necessary.

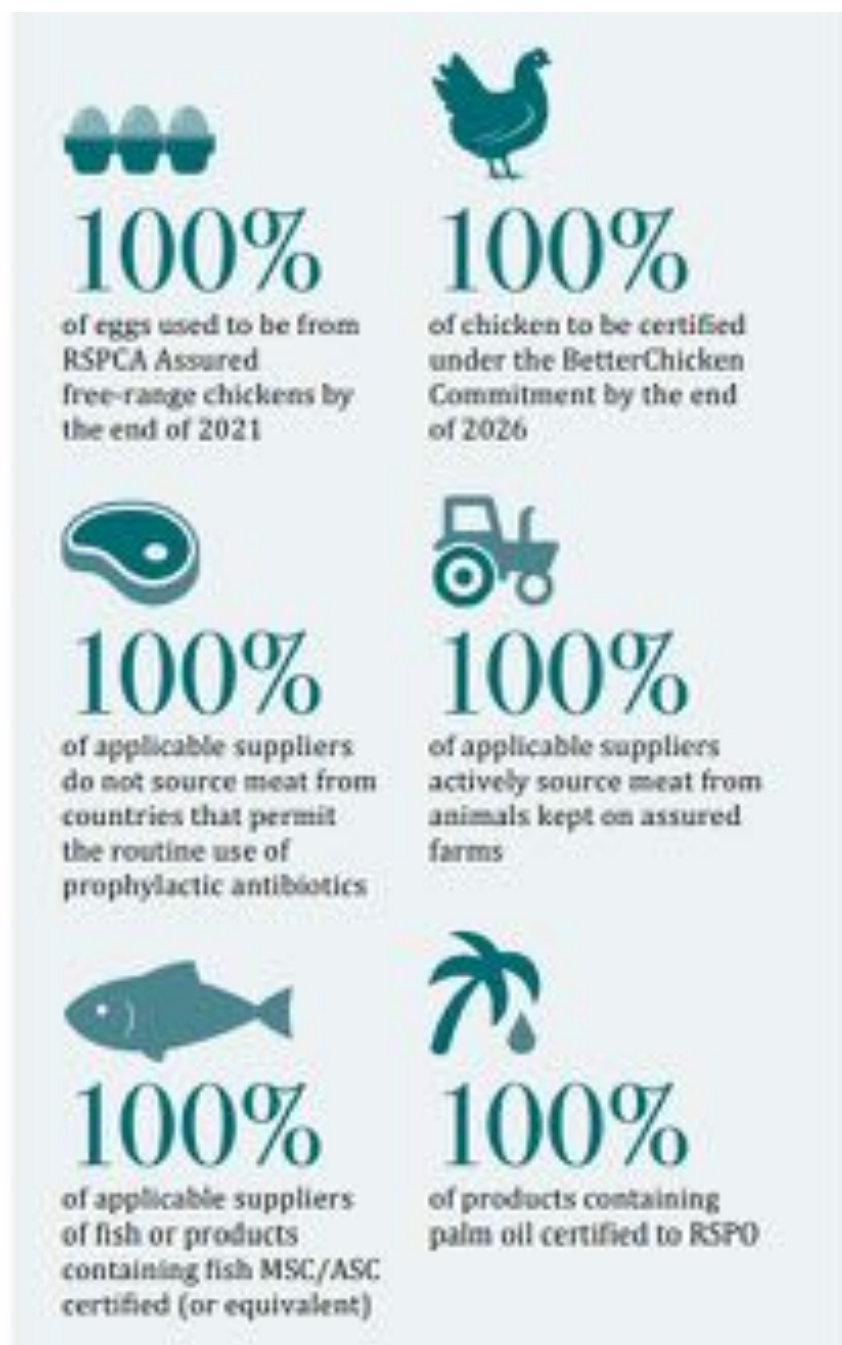
IN DETAIL

Novati & Azzurri’s yearlong project was designed to minimise collection frequencies and deliver a “Zero Landfill” solution. In order to maximise service efficiency and minimise landfill, Novati engaged with 64 service partners across Britain who have supported the vision to create a Recycling Revolution. All restaurants were audited in four weeks during the lead time to mobilisation. Audits focused upon:

- Minimising the cost per cubic meter by ensuring the most suitable containers are placed on site
- Rationalising services by ensuring half full bins are not being emptied

- Optimising container solutions to ensure all recyclable material is placed into the relevant containers

Novati engaged restaurant managers to provide a clear understanding of the financial and environmental impacts of change. Azzurri senior personnel were happy to be one of the first in the sector to achieve the desired environmental credentials.



This project was undertaken as Azzurri recognised that it had “lost control of costs” and focus on recycling and segregation hadn’t previously been a priority. It is well documented that the casual dining sector has faced significant challenges over the past few years and this project was designed to help reduce cost, mitigate against price increases and maximise Azzurri’s environmental credentials.

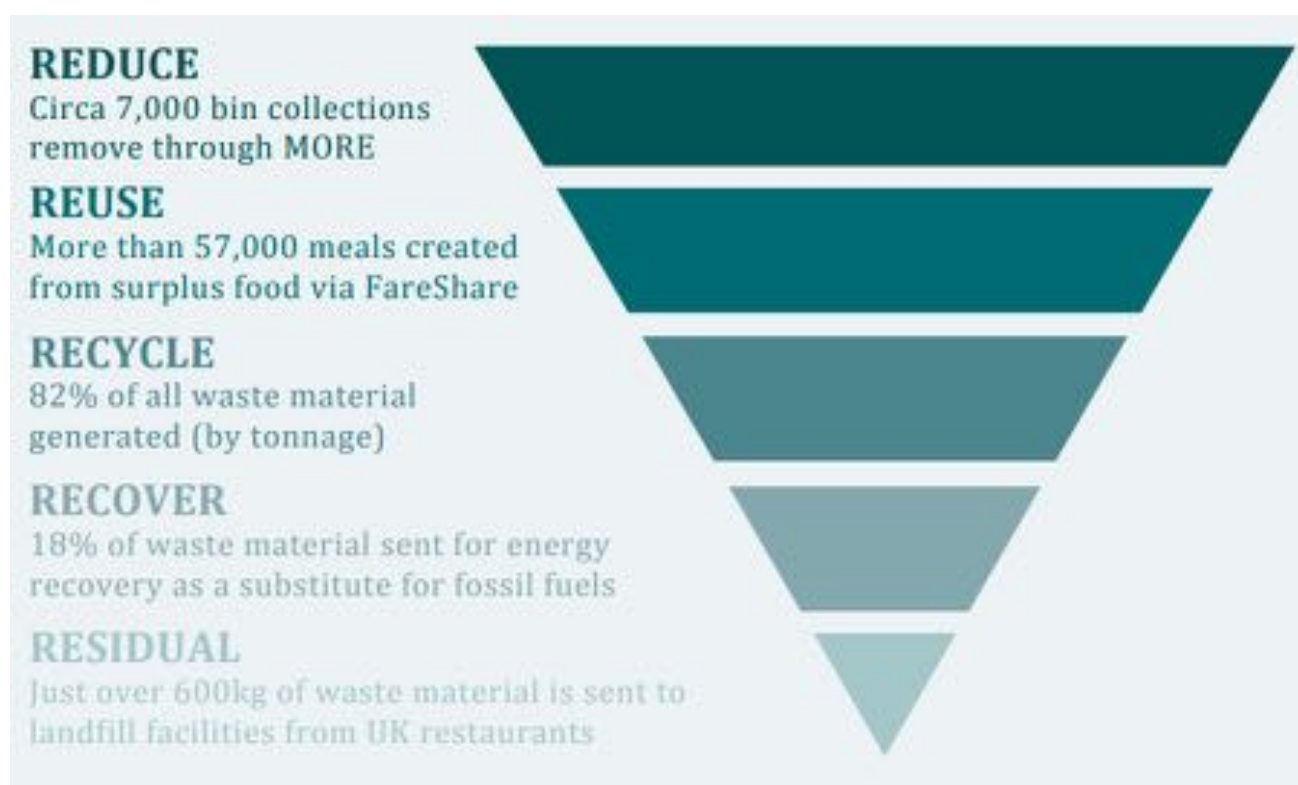
There have been no costs associated with delivering this project. The right solution included approximately 260,000 bins or sacks to be collected each year. This was a reduction of circa 13,000 lifts per year that auditing highlighted were unnecessary. The audit programme meant that Azzurri reduced its waste budget by approximately 7% by implementing the right solution. Educating employees about source segregation required all sites to have posters to make it obvious about the do’s and don’ts for each stream. All documentation was released in electronic format with the option for sites to print themselves at a marginal cost compared with the savings the project has delivered.

At the start of the partnership Novati guaranteed Azzurri £30,000 budget reduction within year 1 and a further £20,000 delivered in year 2. Novati were confident from the offset that the savings could be achieved. This commitment ensured that any marginal start-up costs were more than offset by the overall savings delivered.

In the last year Novati has handled circa 7,789 tonnes of Azzurri’s waste.

- General Waste Recovery 1,541 tonnes (19.8%)
- General Waste Landfill 52 tonnes (0.7%)
- Food 1,198 tonnes (15.4%)
- Glass 3,485 tonnes (44.7%)
- DMR & Cardboard 1,513 tonnes (19.4%)

194 restaurants, circa 4,000 employees, and the local economies of the 64 service partners collecting all materials across the UK felt the environmental and economic benefits associated with mobilising a zero landfill, recycling led solution.



Alongside the substantial savings delivered and the environmental credentials achieved, Azzurri has also reaped the long-term benefits associated with change. Cutting circa. 13,000 lifts p.a. from the schedule doesn't just save money now, it means Azzurri has permanently removed the cost from their budget as well as the associated price increases that would have been linked to the collections. All restaurants have waste segregation at the forefront of their agenda. Restaurant managers understand the environmental and financial benefits associated to optimising, rationalising and minimising their waste services.

The project in itself may not appear to be innovative on the surface. However, Novati's commitment to auditing, reducing and redefining service specifications and engaging service partners to achieve "Zero Landfill" and support the #RecyclingRevolution means that Azzurri is one of the first in the hospitality sector to achieve such outstanding credentials. Prezzo's 2017 annual report simply states that they were "increasing proportions of waste being segregated and recycled". The Restaurant Group website states a "recovery rate of 99%" but there is no reference to recycling levels. The Casual Dining Group website states they have a "goal to decrease landfill and significantly increase recycling and recovery rates".

This project has to be defined as innovative, otherwise all major hospitality sector businesses would be achieving the same results.

Azzurri knows the benefits that are offered by utilising the outsource model. This model taps into SME's where a lot of innovation goes unnoticed. SME's can't traditionally bid for national contracts, so their infrastructure remains largely untapped. The outsource model unlocked this infrastructure for Azzurri & local suppliers.

Best practice within Azzurri can be replicated across any business within the hospitality sector. Azzurri is proud to be a member of the Sustainable Restaurant Association and aren't protective about their

solutions. They openly share and debate issues and solutions at forums so that others can improve their environmental credentials.

We have been fully committed to achieving the ambitious goals set out at the start of the relationship. Keeping the workforce interested in waste is challenging but fundamental to minimising the impact Azzurri's operations have on the environment that we all live in.

Azzurri continues to look for solutions to improve recycling rates further and has goals to reduce and reuse more waste in the years to come. Identifying and implementing closed loop solutions is on the agenda.

Azzurri in partnership with Novati are looking to further their success by:

- Reducing general waste through improved segregation
- Forecasting glass bin requirements based on drinks sales, perfecting collection scheduling
- Driving social media campaigns to celebrate performance and encourage other companies in the industry to make the same commitments
- Continually improving the lowest performing sites by re-auditing and re-engaging.

PSS GROUP

TREE PLANTING

INTRODUCTION

Property Support Services better known as PSS are a family firm based in Ongar Essex that manage Soft Services for clients across the UK

They may not be in the same league as many of the large organisations but there is drive within our organisation and offers service excellence especially within Environmental and Sustainability challenges and we have an impressive customer base who recognise this commitment.

The Crown Estate have appointed PSS to manage their Regent Street portfolio, this comprises of 88 properties, both Commercial and Residential, and includes 18 Waste and Recycling hubs. PSS have been managing the estate now for ten years and over the last six years PSS have grown from strength to strength and have through the Covid Pandemic launched the PSS Quality Management System portal.

IN DETAIL

The QMS portal gives The Crown Estate and JLL a full overview updated daily on the services they provide whether it be the type of flowers being displayed in reception, or a single bait box in a riser cupboard or individual reporting on waste streams.


- Cleaning and Washroom Services
- Waste Management

- Gardening and Floristry
- Pest Control
- Hawking
- Window Cleaning Camera project
- Sustainability
- Environment

In addition, to these services PSS Support Services Manager Kerry Tailford within each of the services manages PSS Environmental and Sustainability support for PSS on the estate and within the attachments that we have provided you will see a drive that is second to none to reach the Crown

CHANGES TODAY LEAD TO A BETTER TOMORROW

We believe in acting responsibly & sustainably in our operations

-  **Reducing the use of harsh chemicals**
We work hard to ensure the chemicals or cleaning methods used are as environmentally-friendly as possible
-  **Cutting down on plastic waste**
Where we can, we look for products where we can close the loop on single-use plastics and where this is not possible, post production plastic products or compostable packaging would be utilised.
-  **Reducing Paper and Card Usage**
Through innovation and cloud-based technology, finding more sustainable options to printed communication methods.

Estate goals on 90% Recycling and Reuse across waste. To this end PSS have provided copies of the Waste Management Guidance Document to customers outlining the Crown and JLL vision, showcasing Nine Recycling streams available to each customer and outlining the journeys that recycling takes, as well as installing Weightrons to identify customers streams, and other useful information about starting Green Teams within an organisation

Within the paper waste element of PSS waste collections PSS are keen not only to save trees but equally to plant them and in 2016 launched Joy Wood where PSS plants trees the purpose to absorb carbon as part of the UK Climate change Plan Alongside this and working with E4, Woodland Trust and Shropshire Wildlife Trust we have helped stabilise the River Seven and increased Biodiversity. Five years on Joy Wood is thriving with wildlife and the latest count is 721 trees. PSS enters a new phase by now supporting the Queens Green Canopy Project and are setting aside another area nest to Joy Wood to plant 150 trees to mark the Queens Platinum celebration and recently received a letter from Prince Charles congratulating them on this initiative

PSS have launched our “Let’s Talk Leaflets “to stimulate conversations around key elements of Sustainability and Environmental challenges which have been extremely successful

The PSS quality management system initial

investment was from the cardboard recycling program that had been set up and today showcases every service on the estate and much more [Appendix 5] This will continue to be developed each year and currently PSS are reviewing Air Pollution, Chemical free cleaning, working with a sustainable estate in Finland to provide all our paper consumables on the estate. Cutting plastics by 50% in 2022 and continuing with our Fareshare charity support providing meals to those in need.

All of this is audited by E4 every year an environmental auditor that monitor PSS performance throughout the year and PSS currently hold this organisation Gold and Diamond Banner Award the highest-level achievable

Electric and hybrid vehicles are growing in popularity all around the world, both for their reduced carbon emissions and lower running costs when compared to petrol and diesel cars. PSS electric cars are fitted with a battery pack, connected to an electric motor, which can be recharged via the mains supply at our hubs. We will be attaching a tracker device on to our electric cars to track the vehicles across the street this will give us some indication of the mileage our electric vehicles are doing.

Regent Street and St James estate recycling awards is an award that recognises, rewards and celebrates organisation and individuals who actively deliver environmental best practice to significantly increase their recycling and improve efficient use of



Sustainable Equipment and Chemicals

Our commitment to sustainability is innate in our business, from our electric vans to our eco-friendly chemicals we are continually committed to doing our part for the environment.

resources, these entries include the following. As Covid hit the recycling awards was put on hold but we intend to start it back up in 2022.

- Best individual initiative
- Best company initiative
- Best newcomer
- Most engaged

Property Support provide commercial cleaning services to clients based within the UK. The company has a small fleet of company cars and vans. Carbon Footprint provides a simple six step annual journey to enhance your sustainability credentials whilst complying to best practice and differentiating your brand. has completed the first step of its annual carbon management journey. To become an exemplar in the market, Property Support should offset its emissions to become a carbon neutral organisation, which is also an internal company goal to reach within 2021. Carbon offsetting is the process of funding climate change solutions, by supporting various projects such as renewable energy developments, clean technologies or protecting existing forests from deforestation.

PSS's current Environmental Management System is accredited to ISO14001:2015. In line with the requirements of the standard a key target is:

- The protection of the environment, including the prevention of pollution. In order to achieve this, we annually undertake an assessment of our significant aspects which considers:
- All emissions to air, water and land from operations and activities.
- The production, storage and disposal of waste.
- The use of energy and natural resources.
- Noise and vibration.
- The supply, storage and handling of materials.
- Visual amenity and heritage factors.

- Impacts on the natural environment.
- The impacts of suppliers and contractors.

We already apply best practice in many of these elements, however, continuous improvement must be made each year in order to make a significant impact with the current focus being improvement on our carbon emissions.

Elimination: ISO14001:2015; Our pledge to Net Zero; Green Achiever

- Reduction: electric waste collection vehicles; training through toolbox talks/E-learning and roadshows; using local suppliers; storing consumables / equipment / chemicals within walking distance of the street; ethical supply chain; energy efficient lighting.
- Substitution: increasing hybrid / electric vehicles within our fleet annually; electric / LPG cleaning equipment on all current and future purchases; currently transitioning to E-On's Green Tariff; eco-friendlier consumables, equipment, chemicals, uniform etc.; paper-free sites
- Compensating: We are offsetting our carbon emissions by planting trees within Shropshire; supporting windfarms through investment with GUK; Supporting the Americas portfolio through investment - which includes reducing deforestation in Brazil, providing efficient cookstoves which cuts down on smoke that causes respiratory disease, payment and employment to local people, sustainable energy to Chile and more.

Since the last tender we've moved virtually completely away from RTU cleaning chemicals to super concentrated products. These products offered substantial savings in product weight, reductions in packaging and reduced delivery frequency. Due to the dosing cap fitted within the bottle it allowed for effective dosing control and made onboarding of new staff quick and efficient. When we brought these products to the street, they



were industry leading and in many respects still are. However sustainable and green products that were around weren't particularly cost effective, questionable credentials and generally offered a poor result in cleaning effectiveness. For us, first and foremost the products we use have to work and do the job they're designed to do. Since the beginning of the pandemic the countries attitudes towards cleaning products have heightened and we are all now acutely aware the impact these products may have on our health.

Across Regent Street estate every bag that comes from JLL customers is tied with a plastic cable tie which doesn't help our environment or our plastic saving credentials. At the plant each tag is then disposed of as general waste via incineration process creating even more pollution. The total amount of cable ties used on the Regent Street estate per year is over half a million, currently not only PSS use cable ties but many of JLL customer cleaning companies use them too. In an innovation when PSS supply the coloured bags i.e., Green for Mixed Recycling, Grey for General Waste, Blue for Glass, Brown for food we will be supplying a new sticker disc along with them and would ask any customer filling waste bags to place the new disc on the bag for identification. Every building is part of a recycling hub, and this will be shown on the disc. Since the project started, we have disposed

of 76747 bags, each one would have consisted of a plastic tag if the initiative hadn't been in place.

Every year an environmental auditors monitor PSS performance and PSS currently hold this organisation Gold and Diamond Banner Award which is the highest-level achievable.

With JLL's and the Crown approval we would like to add cameras to the roof top terraces to enhance the experience for the FM's. We are considering two different live feed cameras covering the roofs to observe butterflies, bees within the meadow areas of the gardens and we would like to eventually install cameras inside bird boxes to observe nesting birds, similar to the BBC2 Spring Watch programme which recently won a BAFTA for the best live events category, this shows that nature is at the forefront of people's minds, especially at the moment. All cameras in these areas would feed into our Quality Management System (QMS) where photos, videos and time lapse could be viewed by the Facilities Managers who look after these sites but also JLL staff who would, I believe really benefit. We believe this would be the first of its kind on Regent Street.

ROSH ENGINEERING

VOC-FREE INDUSTRIAL PAINT

INTRODUCTION

A unique industrial grade water based paint that can be used outdoors as it dries in under an hour down to 6 degC unlike any other paint on the market. It has zero VOCs and provides the same protection as traditional alkyd or white spirit based paints.

There are an estimated 1million power transformers in the UK. The largest will need 1000 litres of paint every 8 – 10 years. The smallest about 30 litres. The volumes required are enormous and the VOCs released from alkyd paints currently runs into millions of kilograms per year. Use of this unique paint brings this to zero.

IN DETAIL

Tens of thousands of gallons of paint are used in the UK every year. Metal work left outdoors suffers from the wonderful British weather and will corrode and rot away if not painted. But as the paint dries it releases Volatile Organic Compounds into the atmosphere. Products painted indoors can use water based paints saving the release of VOCs. But this paint needs temperatures over 20oC otherwise it will not dry. And if not dry, and it rains, all the paint washes off.

A huge amount of plant and equipment sits outdoors and needs to be painted every few years. Working with SK Formulations, Rosh Engineering have adapted a radical and new double bonded polymer water based paint for applications in the electricity supply industry. It dries at temperatures as low as 6oC in under an hour. This means that valuable plant and equipment are protected with ZERO damage to the atmosphere.

Electricity Industry Market Size

There are an estimated 1million power transformers in the UK. The largest will need 1000 litres of paint every 8 – 10 years. The smallest about 30 litres. The volumes required are enormous and the VOCs released from alkyd paints currently runs into millions of kilograms per year.

There are about 120,000 electricity pylons in the UK all needing regular painting like the transformers. The amount of VOCs released by this industry alone is enormous, but no environmentally friendly solution that could be effectively applied all year round like alkyd paints was available until now.

Low Temperature Drying

No other water-based paint, with zero Volatile Organic Compounds, dries at such a low temperature and so quickly. The ability to dry in less than 1 hour also means that even if a rain shower falls on the same day the paint will not wash off. It also means that outdoor painting all year round is possible in the UK without emitting VOCs into the atmosphere.

Previously the only other method polluted the atmosphere. Industry shutdowns, availability of skilled staff and operational efficiencies require painting works to take place all year round. Working with SK Formulations, Rosh Engineering's solution makes this possible for the first time.

Alkyd paints currently in use emit VOCs, and take longer to dry at low temperatures. The SK Formulations solution provides the same protection without having the damaging environmental effects.

Reduced Shutdown Times

The fast drying nature of the SK Formulations solution can also reduce the shutdown time required for high voltage electrical plant. This has the added advantage of reducing the risk of power outages to the electricity network – as switching a transformer out for painting reduces the number of transformers feeding the network. SK Formulations add robustness to network supply with the reduce shutdown requirements.

The electricity supply industry is leading the way in adopting the SK Formulations solution as they want to improve their environmental impact. Further they have substantial requirements for painting plant and equipment outdoors. The fast-drying properties also improve their business performance and efficiency. Any steelwork can use the SK Formulations products, from bridges to metal clad buildings to storage tanks. The fast drying properties mean that subsequent coats can be applied quicker than alkyd paints -- which require about 8 hours drying time before re-coating.

Cost Saving

Watching paint dry may be boring. But it is also expensive.

Applying additional coats quicker far out weighs the slightly higher cost of the paint. It also means shutdown times of plant and equipment can be reduced which means that production can resume and income generation begin quicker than traditional methods.

The same paint technology is also being developed for cold galvanising paints, electrical insulating paints and roof coatings. The opportunities for a VOC free painting world in cold and wet outdoor northerly climates is enormous. Although conservative attitudes need to

Efficient Applications Reducing Wastage

One SK Formulation product now replaces traditional 2 or 3 types. No need for a primer coat. SK paints apply to any clean and dry surface



that alkyd paints would adhere to. No need for a different undercoat or second coat such as an alkyd Micaceous Iron Oxide. The same SK Formulations paint as the first coat can be applied, for a second, third or fourth coat. The uniformity reduces wastage of part finished tins of paint. It can also be repainted without special preparation beyond being clean and dry. The fast drying nature improves efficiency, reduces equipment downtime and delivers what previous systems did but in less time. Less business interruption. Less cost. The fast drying nature means that workers applying the paint need to clean their brushes and spray equipment before a lunch break, but clean and well maintained equipment always works better with any product.

Results

The bulk of painting costs for electricity pylons or transformers is labour. It is a skilled operation. Paint material costs are about 10% of total project costs. The higher cost of the environmentally friendly SK paint is more than offset by the shorter time needed to complete painting due to the incredibly fast drying and overcoating time of the paint. Labour costs are invariably 80% of the total project cost so saving just 20% of time – or one day a week- on a project improves operational efficiency enormously.

For example £10,000 project cost has £8,000 labour costs. 20% saving = £1,600. If £1,000 for paint a 30% higher price will only be £300 more. Nett saving £1,300 or 13% of the total project cost. This does not account for the early return to production of the plant that has shutdown for painting.

Industry Leaders

The electricity industry has a clear goal to reduce environmental impact, and Northern Powergrid is the first to adopt the solution as standard after trialling the new paint. Comparisons on sites with matching pairs having one covered in alkyd paint and one with the new SK Formulation solution give a side by side example of the better environmental performance

at no loss in equipment protection. The patented product has impressed with its ease of application, environmental credentials and safety benefits the wider adoption is currently being assessed.

Other industries are not far behind. Warehouses to storage tanks, bridges to balustrades can all benefit. Additional applications are also available using the same technology. While the volumes are smaller, and environmental improvements not as marked, the direction of travel is still positive.

The conservative nature of industry needs to be tackled. When existing products do the job well why change? Too many want to wait 10 years to see if the SK Formulations paint last as long as alkyd paints, not believing accelerated laboratory trials. Ten years is too late. Environmental issues need tackling now.

Improved Health & Safety

The SK Formulations paint has reduced health and safety requirements. With no hazardous chemicals it is easier to store compared with Alkyd paints that are flammable. Airborne solvents are also eliminated in the new paint reducing risks to workers as well as the environment.

The electricity industry uses over 10 million litres of paint per year. If it fully adopts SK Formulations this will prevent the release of over 7.5million litres of solvent every year into the atmosphere. One industry, one process, one step at a time, one big difference: ZERO emissions.

Fast drying at low temperatures –
A unique environment friendly
industrial coating for outdoor
application all year round

CORRONIL - 0767 **ANTI-CORROSION COATING**

A water based paint that is suitable for application outdoors as it dries within an hour even in temperatures as low as 5°C. The single pack two coat system delivers a protective coating to replace traditional alkyd paints that pollute the environment with VOCs. For all applications, from industrial equipment to steel structures, it is now being adopted by the UK's Electricity Distribution Industry to coat power transformers all year round.

CORRONIL - 0767 is a patented, water based, sustainable technology product that extends the life of structures.

- ✓ Zero VOC
- ✓ Quick drying time even in temperatures as low as 5°C
- ✓ Single pack, Two coat system.

Adopting Greenovoc's CORRONIL - 0767 will help you meet your Carbon Zero targets by eliminating the VOCs released into the atmosphere during and after coating.



Green Coating
Technology



VOC Free



No Odour



No Fumes



Environment
Friendly

SABANCI HOLDING

SABANCI VOLUNTEERS PROGRAMME

INTRODUCTION

Social responsibility exists in Sabancı Holding's DNA since its foundation with the philanthropic works which has been run by Sabancı Foundation for 46 years. Also, for years, Sabancı Group employees have been in demand of working for the society's good. In 2015, in order to institutionalize these demands, accumulate all of them under a platform, create synergy among employees, and use the qualified workforce more effectively and efficiently for the act of common good of society, Sabancı Volunteers Programme which is the biggest corporate volunteering and social responsibility program in Turkey is put into action. In this way, this platform answered both expectation of employees and the society while extending the scope of our knowledge and experience.

Moreover, The Sabancı Holding, one of the top largest multi-business company, has been at the

forefront of the gender equality movement in the world. In the Holding, the rate of women employees is 38,5% among white collar workers which is above Turkey average rates. The rate women in managerial positions in the Holding are 15%. In 2015, 52% of women employees have been promoted.

In this context, Sabancı Holding has signed Women's Empowerment Principles and became the first Turkish signatory in 2011. Sabancı Holding has decided to sign the principles in order to support the cause of gender equality in the work place and trigger a positive change in the business world. Guler Sabancı, chairman of Sabancı Holding and UN Global Compact Executive Board Member has signed and submitted the statement to former Under-Secretary-General and Executive Director of UN Women and president of Chile Michelle Bachelet.



Online gender equality training for more than **10.000** Sabancı employees



IN DETAIL

Sabancı Volunteers, is a social responsibility programme covering the whole Sabancı Group. The programme covers the online trainings on gender equality to be delivered to all the employees of Sabancı Group and the social projects to be carried out through volunteer teams.

In the first stage, details of the programme was conveyed to nearly 500 team leaders comprising of Sabancı employees working all over Turkey. Multipurpose trainings covering civil society, working with volunteers and project cycle management were delivered to team leaders on 2015. The team leaders formed their own teams to put their projects into practice. “Sabancı Volunteers” worked on ‘woman issues’ for the first three years. Since the beginning of 2020, volunteers focused on “youth” issues.

For the first year, we have started with a target of 500 volunteers who will be active in the projects but the application process ended up around 1.000 applications. The Program’s second third year phase has started. The second application process also ended up around 1.000 applications. We have started volunteering trainings for the applicants in 4 cities.. Also we will be implementing a Volunteering Campaign among Turkey through social media campaigns in order to increase the volunteering among young people.

In terms of the communication objectives, firstly we aimed to create awareness of the programme and engage employees into it. In addition, strengthening employee loyalty and position them as the

advocates of the company while enhancing Sabancı brand image

In terms of rationale, programme is created because the Sabancı Group regards basing all corporate conduct on the awareness of social responsibility as an unchangeable core component of its management approach. Moreover, according to the researches percentage of volunteerism is too low in Turkey, so Sabancı Volunteers Programme aims to give the lead about both volunteerism in general and specifically employee volunteerism in Turkey.

In planning, Sabancı Group is fortunate to have one of the most socially conscious Sabancı Foundation with considerable, valuable experience and Sabancı University while determining the concept and content of the programme and online training. Moreover, an integrated communication plan, including internal and external aspects, was implemented for the programme. The launch of the programme has been done with a press conference with the presence of Chairman and attracted high media interest. Just right after the press conference, an internal message was sent to the employees.

After the kick-off, the program was highly welcomed and internalized by employees. This is partly because the initiative is highly encouraged by the top management and gave support at the highest level. Top management did not miss any opportunity to communicate with employees via internal messages since the launch of the programme. The Chairman has encouraged employees to participate in the volunteering program in person with motivational letters and videos. Similar letters and videos were

prepared for each- mile stone of the programme including the opening of applications, beginning of trainings, The World Volunteering Day, etc.

For the kick-off, the strategic positioning was “Sabancı extends its philanthropic experience” and “the largest corporate volunteering programme of Turkey has started”. Secondly, we have stated that we are trying to create solutions for the gender inequality problem of the society. We also underlined that our power comes from our employees. As the projects started we have given messages about the projects in order to show the progress to public and encourage other employees to join the programme. Internally, we also gave motivational messages that underlines the importance of each project and effect it creates.

Moreover, a corporate volunteering programme is not a new concept however Sabancı Volunteers Programme is innovative in the way that it is initiated to overcome the potential challenges like:

1. Insufficient application for volunteering
2. Lack of project development
3. Lack of interest to online trainings

Due to internalized social responsibility culture of the company, we did not face these challenges. Multipurpose trainings covering civil society, volunteering and project cycle management were delivered to team leaders for the projects to be

proper and in line with Sabancı values. So that, before they start, they became more aware of volunteering and its dynamics.

In order to strengthen the theoretical background of our volunteer projects and enable the sustainability, we have initiated an gender equality online training in which 40.000 employees have benefited so far. In this training employees are trained on “Concepts and definitions”, “Education and Gender”, “Business and Gender”, “Violence Against Women”, and “Forced and Early Marriage” issues in Turkey and the world. Sabancı University Gender Forum worked for the programme while shaping the online trainings content on gender equality. Instead of a standard, written online training, video was selected as a tool. Celebrities were used in online training videos to grab more attention. Also viral videos were prepared to show the misconceptions about gender issue and increase awareness of the project.

Online platforms were created for the project including, web site and social media channels. Besides, internal online platforms and newsletter were another strong media to reach the target audience. Sabancı Volunteers Facebook page was created in order to share good examples and reveal stories behind the projects. Also, through daily updates in Twitter account and web site of the programme, public is aimed to be informed. Also World Women Day and World Voluntering Day are celebrated through social media campaigns. Press bulletins about the projects are sent to the national

350 active volunteers (57% female, 43% male)



45 projects in 12 Sabancı Group Companies in 11 cities.



media periodically and exclusive interviews are conducted since the beginning.

The program is implemented in two phases: Online learning (aims to increase awareness on gender equality to more than 60.000) consisted of 5 modules: "Concepts and definitions on gender inequality", "Education and Gender", "Business and Gender", "Violence against Women", and "Early Marriage". In 1 year, training has been delivered to more than 40.000 employees and 1200 scholars of Sabancı Foundation. Volunteer capacity building on-site trainings covering civil society, volunteering and project cycle management were delivered to team leaders for the projects to be proper and in line with Sabancı values. The details of the programme were conveyed to 500 team leaders with 8 volunteering trainings in 4 cities in Turkey: Ankara, İstanbul, İzmir and Adana, comprising of employees working in 40 different cities. Project teams consist of team leaders' colleagues, family members and suppliers of their company which increased the impact of volunteering in the society. 400 Sabancı Volunteers ran 45 women-centered projects in 11 Sabancı Group companies in 12 cities of Turkey between 2015-2019. These projects include trainings on financial literacy, giving support to cancer patients, women in shelter, economically disadvantaged women and young women in orphanage, providing job opportunities. Sabancı Volunteers have supported the lives of more than

2000 disadvantaged women so far. There are many projects in these projects that we carry out in various fields such as employment, education, personal development, psycho-social support, health.

The success of the programme has been evaluated regarding several criteria including number of applications, number of attendance in volunteering training, number of projects and their continuity. Besides, these numerical indicators, it is expected from volunteers to submit quarterly reports regarding the progress of their projects. The reports include details such as the problems faced and their solutions, feedbacks from stakeholders, fund raising and budget management details. Besides, a volunteering perception research has been conducted in the beginning of the programme in order to get the insights. For the online trainings, a survey is conducted after they complete it in order to analyze how the perception of gender equality has changed among employees. Being solution-oriented, diverse, inclusive and continuous, Sabancı Volunteers Program is a good example to inspire fellow professionals, leading to a more enlightened and extended perspective to take responsibility for the society.

The Program is beneficial in various aspects: First of all, Sabancı Volunteers Program provides an opportunity to employ the qualified workforce who are eager to contribute to the society but do not

know where to start or what to do individually more efficiently. It provides a baseline to bring willing people together and create a benefit. Secondly these projects are very effective to provide solutions wherever and whenever it is needed. This is because project teams among the Sabancı Volunteers are encouraged to develop local projects for the society they operate in. They can implement effective projects to solve a local issue, they know the problems and people, they can more easily partner with local authorities, suppliers, non-governmental organizations and involve local volunteers to implement local CSR projects. The program also provides benefits for personal development. Apart from creating team spirit and synergy, implementing a social project improves creativity, organization, planning, negotiation and problem solving skills. Such program also has a snowball effect; The successful projects inspire other teams to implement similar projects in their company or in their region, since all projects are in the projects pool and accessible by all volunteers. The fact that, project teams consists of team leaders' colleagues, family members, and suppliers of their company, increases the vastness of the volunteer army.

The outcomes of our program show us that the program inspires and motivates our employees to

reach their full potential. We see that our employees are passionate about making a difference in the lives of the people. Two volunteering surveys has been conducted in order to measure the employee satisfaction and it seems that employee satisfaction raised 40 % to 80 % in two years. Moreover, every year, we are gathering volunteers in order them to share experience, inspire among others and develop their projects in a better way through workshops. Every six months, we are measuring the impact of our volunteering teams through reports.

According to these reports, teams including 350 volunteers have supported 2000 disadvantaged women in two years. Sabancı Volunteers web site has been visited from 40 countries and we have reached nearly 23 million people via PR activities.

Sabancı Holding does not deliver any grant for Sabancı Volunteers projects but Sabancı volunteers are trained about fund raising activities in volunteer trainings. Each Sabancı volunteer is responsible for creating their budget for their social responsibility project. This empowered our volunteers on fund raising and budget management and increased their ability to communicate with the local stakeholders, their company and NGOs in their region in a more cost effective way.



SHELL PHILIPPINES EXPLORATION B.V. EMPOWERING A COUNTRY AND ITS PEOPLE

INTRODUCTION

Social Performance Approach: EMPOWERING A COUNTRY AND ITS PEOPLE

The US\$4.5 billion Malampaya deep water-gas-power project is the country's pride in energy security and independence — enabling the extraction of indigenous gas to fuel up to 30% of the country's electricity requirements.

From a dominantly foreign workforce at the start of the field's operations in 2001, Malampaya turned out to be a successful showcase of world-class Filipino talent and expertise in navigating highly complex energy infrastructure. By the second platform of the gas facility installed in 2015, operator-firm Shell Philippines Exploration B.V. (SPEX) could exuberantly vouch for its platform that is "powered by Filipinos, for the Filipinos."

Beyond these tangible benefits, SPEX is torchbearer of sustainable development for its host communities — particularly in the challenging terrains of Palawan. SPEX's "Social Performance" approach anchors on three principles: enhancing positive impact, mitigating negative impact, and creating social investments.

Committed to this framework, SPEX supports three social development foundations in the project's zone of impact. It includes the provinces of Palawan, Batangas and Mindoro: Pilipinas Shell Foundation Inc. (PSFI), Malampaya Foundation Inc. (MFI), and the Mindoro Biodiversity Conservation Foundation, Inc (MBCFI).

On a wider scale, SPEX pushed several initiatives — such as improving energy access, boosting ecological balance, aggressively driving against the spread of malaria, and improving market access

for farmers. It also actively supports the country's response to the coronavirus pandemic.

Energy security and independence are concerns of huge public interest in the Philippines- and the Malampaya project bridges the gap between a country's major ambition and the reality of clean energy source that it is now benefitting on.

More than delivering energy, Malampaya empowers the nation and allows its people to thrive for the future.

IN DETAIL

Shell's sustainable development wheel *Empowering a country and its people*

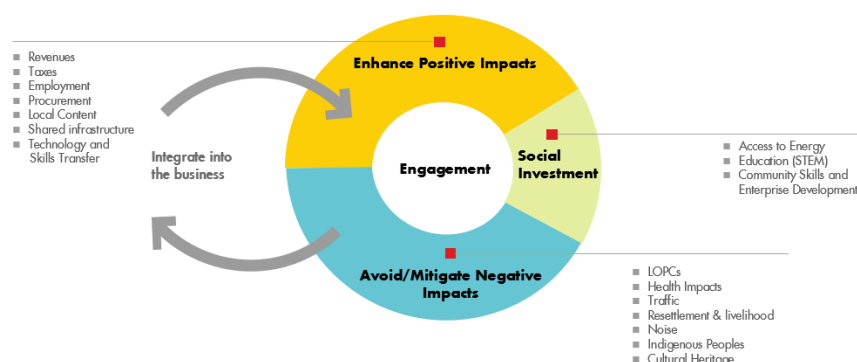
Shell Philippines Exploration B.V. (SPEX) marries reliable energy infrastructure, cleaner solutions for energy security, health and safety, and social investments in its operations and neighboring communities. The Malampaya field boosts the country's carbon footprints reduction strategy while fueling 3,200 megawatts of electricity demand. Since it is clean and indigenous fuel, the gas from Malampaya reduced the need for imported oil and contributed up to 50% reduction in carbon dioxide (CO₂) emissions, which also improved overall air quality for the country compared to utilizing coal facilities.

Beyond its technical achievements, SPEX developed a Social Performance framework to engender sustainable positive impact in its host communities. SPEX held continuing dialogues with community members to identify key societal challenges. For Palawan, the list included fighting the deadly Malaria, saving an endangered marine ecosystem, supporting indigenous and marginalized people, and providing reliable electricity to the large island

province. Because Palawan is the “last ecological frontier,” preserving its resources while pushing for its development is of utmost importance to the entire Philippines.

SPEX approached this challenge with its Social Performance wheel as the fulcrum, anchored by the following factors:

- Avoid / mitigate negative impacts of Malampaya’s operations
- Enhance positive impacts
- Deliver social investments
- Continued engagement with its broad range of stakeholders



For Palawan, SPEX partnered with two social development foundations: Pilipinas Shell Foundation Inc. (PSFI), Malampaya Foundation Inc. (MFI).

Through these foundations, SPEX helped ensure marine resources protection and preservation on technology deployment. It also generated employment opportunities and enhanced technical expertise for Filipino workers, ultimately raising quality of life among its host communities.

ENHANCING POSITIVE IMPACT

Malampaya is “proudly Filipino”

In the early 2000s, it was difficult to distinguish the SPEX Alabang office as based in the Philippines,

with majority of the teams comprised of foreign staff. “It was more like the offices in London or the Hague,” revealed Paul Gavino, External Relations Manager for Upstream of Shell Philippines.

A series of turning points happened in the Malampaya operations, the offshore platform which now supplies up to 30% of the country’s needs. Filipino engineers and head office support staff displayed expertise and zeal to learn, absorb, and perform the technical demands of operating a complex facility with deep water subsea levels.

In 2007, the first Filipino managing director Sebastian Quiñones took the helm of SPEX, and it soon became a key milestone for the “localization” or the ascendancy of the Filipinos to become the indispensable manpower of Malampaya.

“We can safely and confidently say that this is a platform harnessing local gas, powered by Filipinos for Filipinos,” Gavino enthused.

Even the pilot roles of offshore-rated helicopters carrying

Malampaya teams were transposed to Filipinos — a step that gained headway under the leadership of current SPEX Managing Director Don Paulino.

Job generation had been massive for roughly 3,500 direct and indirect workers, even attracting a good number of overseas Filipino workers (OFWs) back home to become part of the skilled local workers in the project.

Another major component of the project was the design and construction of its second offshore platform in 2015. This US \$750million investment entailed the installation of additional powerful compressors to address the depleting pressure from the Malampaya gas reservoir. Aside from the hundreds of Filipinos from Fluor Philippines who designed it, it enlisted the help of over 1,400

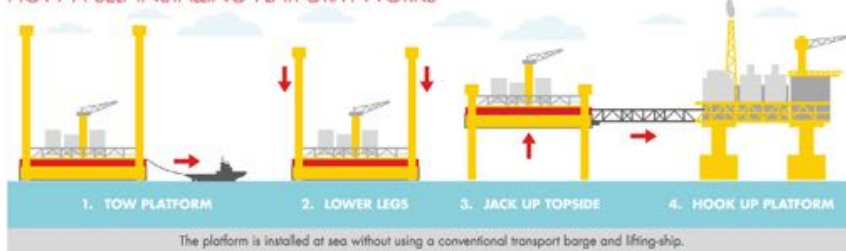
Filipinos to construct the second platform in the shipyard of Keppel Subic in Zambales, a province north of Manila.

“If you see an image of Malampaya offshore, the yellow platform is the second platform – and that’s totally made in the Philippines. Not only were the economics right, it completed the picture of the country being powered by Filipinos for Filipinos,” Gavino said.

MALAMPAYA PHASE 3 PROJECT

Deep-water gas-to-power, the Philippines

HOW A SELF-INSTALLING PLATFORM WORKS



Beyond achieving top-tier professional development for its own workforce, SPEX pays it forward by organizing a skills enhancement program, primarily for out-of-school youth and unemployed adults. The Bridging Employment through Skills Training (BEST) program, together with Malampaya Foundation Inc. (MFI), supports qualified beneficiaries with training for technical-industrial vocational skills — ranging from welding and pipe-fitting, to piping, insulation, and other construction skills. Values formation, character-building sessions and English proficiency coaching are also in the module so trainees could position themselves for their dream jobs.

After successful completion, the graduates receive additional guidance in landing employment opportunities through Industry Networking (I-Net), a scheme that links trainees to industries in need of skilled workers.

MITIGATING NEGATIVE IMPACT

Stewardship for health, safety, and the environment

The earlier phase of development of the gas field under Malampaya phase 1 exhibited SPEX’s paramount stewardship for the environment. It was manifested in their construction of its 504-kilometer pipeline, wherein Shell made the decision to have it re-routed to avoid disturbing Mindoro’s intricate biodiversity and ancestral grounds — even if it meant higher capital spending.

Similarly, MFI is spearheading community-based marine biodiversity conservation partnerships aimed at guarding the marine-protected areas (MPAs) by deputizing volunteer fishermen or “Bantay Dagat” to be sea rangers along the coasts of Malampaya’s host communities in Northern Palawan, Oriental

Mindoro, and Batangas City.

Through the years, Shell judiciously executed its Health, Safety, Security and Environment (HSSE) standard — not just to reduce the impact of its operations on the environment but to guarantee sterling safety records.

Shell’s “Goal Zero” entails “no harm and no leaks across all its operations,” and everyone in the company strives to achieve this goal all day and every day.

The “Goal Zero” strategy is all about caring for its people. It pivots on three areas of safety hazards that could engender highest risks in execution of their activities: **personal**, **process** and **transport safety**. Shell sets consistent and high safety standards across the company and expects its employees and contractors to comply with all the prescribed parameters – whether they’re on the field or at the office. It works hard to keep its staff, partner contractors, and everyone else safe.

SPEX has multi-pronged environmental performance parameters, including: managing emissions of greenhouse gases; efficient energy use; less flaring and burning of gas during production; preventing toxic spills; fresh water conservation; and biodiversity preservation across all operations.

Eliminating the malaria scourge

Malaria is a fatal disease that has been affecting Filipinos, and Palawan has always been the epicenter of the worst cases of infections. According to data, 80% of malaria cases in the Philippines — translating to 54,000 cases and 99 deaths — happened in Palawan in 1999.

That prompted SPEX and PSFI to launch Kilusan Ligtas Malaria (Movement to Eliminate Malaria), in collaboration with the Provincial Government of Palawan and the Department of Health. 21 years later, it gained traction in bringing down the cases by 92-percent and prodigiously succeeded in decreasing the incidents of death by a record 99% through rigorous community engagements, building a network of capable barangay microscopists, and distributing more than a million mosquito to more than 400 barangay units on the island. Now on its last mile, the program is hopeful to help Palawan become completely malaria-free soon.

KLM gained so much success that it also attracted funding from the Global Fund to Fight Aids, Tuberculosis and Malaria (GFATM). This enabled the spread of KLM to other provinces of the Philippines. KLM has helped the country achieve this MDG goal 6 of halting and reversing the burden of malaria ahead by almost 2 years.

DELIVERING SOCIAL INVESTMENTS

“Access to Energy” and “Harvest for our Heroes”

The Philippines has over 2.0 million households without electricity, and these homes are typically located in marginal areas considered

‘uneconomically viable’ due to their far-flung locations away from power grids.

To reach these communities, there are various economic and physical barriers to get through, such as traversing tens of kilometers of dirt roads and crossing multiple rivers. Despite these constraints, SPEX rose to the challenge and took bold steps to provide host-communities in Palawan with power. Through the Access to Energy (A2E) initiative, SPEX and PSFI concretized the long-time energy dreams of 3,383 people within its impact zones in Palawan.

Leveraging on the Integrated Support to Indigenous Peoples (ISIP) platform of PSFI, electricity is provided through the installation of off-grid power systems – a micro grid network underpinned by the hybrid of solar, wind and hydropower technologies. SPEX brought in a more advanced RE-based micro-grid electrification system, which paradoxically is still perceived as a “luxury” even for consumers conventionally connected to the grid. The technology endowed to the community is supplemented by rigorous training for the communities to form functioning cooperatives to allow for the sustainable operation and maintenance of these systems.

This year, six tribal groups in Batak, Decabaitot, Baras, Binaluan, Ligad and Maytegued villages



now get to keep their lights on at home, in schools, churches, and more.

The A2E electrification story started with the Batak tribal group in Sitio Kalakwasan, Barangay Tanabag, Puerto Princesa City, with a 3.0-kilowatt peak solar-hydro hybrid system. ‘Black sky events’ had been typical for people in the area as there were even no streetlights to community hall, which was located far away and required crossing a river 11 times to reach the site.

For Shell’s electrification project in Binaluan, Barangay Liminangcong, Taytay, Palawan in particular, Ching-ching (who is the government president of an elementary school in the village) now relishes her dream of becoming a computer engineer. It was made possible because of the energy access provided by the off-grid power generation facility in their locality. Further empowered by five (5) desktop computers donated by Energy Secretary Alfonso Cusi, she and many others can now take computer lessons — a critical first step into achieving her goals.

With electricity access, these weaving and honeybee-producing communities have boosted their outputs and increased income. Other livelihood opportunities were also spurred, such as owning sari-sari stores that can already sell frozen basic goods. “Children can now study at night and even enjoy ice cream stored in chillers,” shared SPEX Managing Director Don Paulino. “Boat makers are also able to produce more than their usual quota per month, after having access to sufficient energy to use power tools.” For the people of Palawan, electricity has indeed become a source of empowerment and tool to support their productivity.

The A2E program, which was already funneled with an investment of P38.36 million, is an offshoot of the Integrated Support to Indigenous Peoples (ISIP) that Shell has already been championing since the start of the Malampaya field’s commercial operations in 2001.

Ani Para sa Bayani (Harvest for our Heroes)

The country’s health care professionals and essential workers were practically overstretched during the Covid-19 pandemic. Now more than ever, they need moral support, societal aid, and nutrition to keep them on their feet.

PSFI facilitated the procurement and transportation of farmers’ produce which were in danger of being stranded in their farm were transported to community kitchens, and in turn, the partners took charge of cooking, packing and delivering the goods to front-liners and the communities in need.

Through “Harvest for Our Heroes,” Shell helped ensure food security for the Filipinos during the community lockdowns, while also providing support to farmers and the agriculture industry in general. It is a close collaboration between local government units (LGUs), government offices, civil society partner Frontline Feeders PH, and the various health care facilities of the country, SPEX and PSFI.

Frontline Feeders PH, in particular, organized a group of individuals – most specifically doctors, restaurant owners and non-government organizations – to mobilize food distribution to different hospitals in Metro Manila and neighboring cities.

These networks bring food to targeted establishments and hospitals, with Frontline Feeders PH, UPAA, Palawan Community Kitchen, World Vision, RockEd, among other partners, soliciting funds that can be used to buy food supplies, then it will coordinate the logistics and allocate food deliveries to targeted beneficiaries.

In total, 198 tonnes of vegetables were procured, 3,996 farmers were supported, and 483,889 meals were served to frontline workers through this program.

STC

ERP PROJECT

INTRODUCTION

At STC we took a very serious measures to design our CSR projects and we have followed the most beneficial methodology and the good CSR practices to ensure maximizing our positive impact on society and environment as well.

STC dedicate resources to manage our overall impact on our stakeholders and put corporate sustainability as top priority for the company.

My company vision is to be a role model in middle east and to transfer the knowledge related to sustainability best practices in the region.



Number of community development projects per category



Total awareness messages sent to the community:

15 billion sms

IN DETAIL

In 2018, STC ERP Project was launched providing a safe and secure cloud-based ERP system with the aim of enhancing operational efficiency of non-profit organizations and maximizing the added value for their target demographic. The pilot STC ERP system served 23 non-profit organizations 38 branches 486 employees and estimated to have served over 8M beneficiaries. As a result of ERP Project successful pilot, the Technical Enablement Project was developed with a more comprehensive Scope, maximizing the values and the impact from STC social contribution, containing wide-ranging services to meet all possible non-profit organizations admin & operational needs, and targeting to serve 15% of non-profit sector at a rate of 30 per month.

This project is an extension of STC ERP pilot, this pilot served 23 non-profit organizations with an ERP system to improve and enhance organizational efficiency. The estimated SROI on this pilot was 3:1 which is expected to apply on the project expansion through offering 9 more technical solutions for free in addition to the STC ERP system.

The pilot STC ERP system served 23 non-profit organizations 38 branches 486 employees and estimated to have served over 8M beneficiaries. For the technical enablement project we are targeting 15% of non-profit sector at a rate of serving 30 non-profit organizations every month.

Beneficiaries



SUPERIOR ESSEX COMMUNICATIONS

CREATING THE SUSTAINABLE CABLE THAT CONNECTS US ALL

INTRODUCTION

Superior Essex Communications is the leading manufacturer and supplier of communications cable in North America, and since 1930, we have operated at the forefront of innovation. Today – through our Power-over-Ethernet (PoE) technology, enablement of Sustainable Intelligent Buildings and cities, 5G communications infrastructure and constant technological advancements – we continue to live up to that long legacy of innovation.

Over the past decade, we have continuously proven ourselves as the industry leader with our sustainable manufacturing processes and the sustainable products they create. Proudly, we are:

- The first and only company in our industry – and one of only nine across the entire United States – with Zero Waste to Landfill certification, now for five years straight and counting.
- The first and only Red List Free communications cable manufacturer, meaning that our sustainable cables contain none of the 800 chemicals classed as most harmful to people and the environment by the International Living Future Institute.
- The first in our industry to offer transparency labels including Environmental Product Declarations, Health Product Declarations, Life Cycle Assessments and Embodied Carbon Analyses, now for 55 product families and 800 product SKUs.

- A founding member of the Living Product 50 collaborative and an active member in numerous other organizations dedicated to optimizing the sustainability of product generation and use, including the Mindful Materials group and the Materials Carbon Action Network.

We are dedicated to leading the way for our industry to now move from transparency to optimization – because we genuinely believe that the technology that interconnects the world should also respect it.

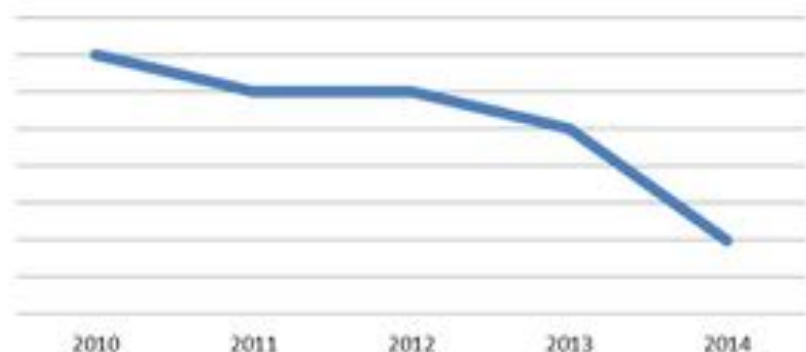
We continue to set the benchmark for product sustainability in the telecommunications industry by continually improving our products' energy efficiency, considering and changing their content, and providing transparent information about their environmental and health impacts.

IN DETAIL

Sustainable Manufacturing, Sustainable Products

When it comes to sustainable manufacturing, one can analyze such a claim in two different ways.

Superior Essex Consolidated Gross Scrap Trend



First, the manufactured products can be considered sustainable based upon their chemical composition – that is to say, the healthy “ingredients” they contain and the unhealthy ones that have been excluded. Second, the manufacturing company can be acting in a sustainable manner if they’ve been manufacturing in a such a way that limits the environmental impact of their production.

And when it comes to manufacturing cable, Superior Essex considers both – what we make, as well as how we make it – when creating our communications products. As a result, we have led the cable manufacturing industry in overall sustainability for a decade now.

The Road to Zero Waste

Our 10-year journey to becoming certified Zero Waste to Landfill involved many steps and major commitment at all levels of our organization. But, surprisingly enough, the idea began as a grassroots effort from our own dedicated employees on the front lines of our plant floor, working in tandem alongside our plant managers, at our manufacturing plant in Hoisington, Kansas. On their own, they saw an opportunity for better, more environmentally conscious practices and processes, and then they committed themselves fully – and with a dual sense of pride and responsibility – to manufacturing our products more sustainably than ever before.

After some initial success and proof of concept at the plant level, the idea spread upward throughout the company – all the way up to our division president and CEO. And they, in turn, supported the sustainability cause in earnest with considerable investment and training, seeing the impact it could have on our employees, our company and our shared world. As a result, in 2005, various teams at Superior Essex began to deeply evaluate the sustainability of our company’s manufacturing processes.

The First Step to Sustainable – Research and Assessment

On the road to sustainability, our first step was evaluation – measuring to find our baseline, and then using that to identify areas for improvement. The life cycle assessment, or LCA – conducted by a third-party company and validated by leading safety science company Underwriters Laboratories – offered us that baseline for sustainability and started us down the road to creating environmentally conscious manufacturing and products – and leading the industry in the process.

The LCA thoroughly analyzes the environmental impacts of a product during its lifecycle, from cradle to grave. This includes everything from raw material extraction through materials processing, manufacturing, distribution, use and end-of-life. It

Superior Essex maintains certification to the appropriate Quality Management System through Quality Systems Registrars. Semi-annual surveillance is conducted of the quality systems in each manufacturing facility, ensuring ongoing compliance.



is a rigorous, lengthy process that involves multiple parties at every level of an organization, as well as the supply chain.

For many companies, the LCA is an investigation as much as it is an evaluation, often illuminating the environmental impacts of their products and practices. For Superior Essex, the first cable manufacturer to complete an LCA, the process was meticulous and eye-opening. Once we finished the baseline evaluation, we determined that we could significantly improve our sustainability in some areas, such as waste diversion and energy efficiency, by implementing various changes to our facilities, supply chain and habits. And as a result of the LCA, we launched our company-wide sustainability initiatives in 2005, setting forth a long-term strategy to reduce our overall environmental footprint for decades to come.

Minding Our Manufacturing

An integral part of this strategy was our waste diversion program, which sought to reduce the amount of refuse our manufacturing plants contributed to landfills. But, our ultimate goal was a bit loftier – to achieve Zero Waste to Landfill status and certification.

The three key strategies to our earning Zero Waste to Landfill status were:

- Developing innovative sustainable manufacturing practices – Before our sustainability initiatives, we sent most of our plastic waste to a landfill. Today, plastic waste we produce is separated and much of it reprocessed into plastic pellets that can be blended with virgin plastic for new cable production or used for other non-cable products. Other examples include recycling and reuse of copper scrap and plastic spools.

Another significant source of waste were the wooden reels used to store and ship cable and

wire products. We began reusing our reels or recycling them to create new materials. Our customers also can reduce their downstream footprint through a reel recycling program offered by one of our partners.

- Insisting on accountability in the supply chain – The Zero Waste initiative demanded a high level of control over our supply chain to account for the waste created throughout our entire downstream process. We had to ensure that the companies we use to recycle scrap metals, wood, plastics and other materials were not landfilling that waste. Every company we work with goes through an extensive evaluation so we know where our waste is going.
- Attaining credibility through outside certification – To ensure that our environmental claims were accurate, we chose to have GreenCircle Certified, LLC verify and award our Zero Waste to Landfill certification. In a market filled with greenwashing, it was important to us to verify our environmental claims and offer customers assurance that we are diligent and transparent in our waste reduction efforts.

To promote further employee and management buy-in across the Superior Essex Communications division, we developed internal training programs to communicate the forthcoming sustainability changes to our manufacturing practices. We continue that communication and training to this day.

Externally, we communicated via press releases, magazine articles, email blasts, industry award publicity and social media channels about our sustainability journey – including both our learnings and our successes. We publicly shared our sustainability reports and created a dedicated sustainability section of our website. To see more, visit <https://superioressexcommunications.com/sustainability>.

Results

Overall, our landfill waste diversion program has had a tremendous positive impact for the company, reducing operational costs by eliminating inefficiencies in our waste management procedures. And as one of just a handful of American manufacturers to obtain Zero Waste certification, it has opened up new opportunities in the marketplace for sustainable commodities.

But, most importantly, it has drastically reduced our environmental footprint. Today, recycling and reuse prevent more than 8.9 million pounds of waste from reaching landfills each year, or a total of 63 million pounds since the process began in 2006. Our reel reuse and recycling program has reduced our consumption of new reels by 4 million pounds annually.

In addition to the programs that earned us Zero Waste to Landfill certification, we also evaluated our manufacturing processes to reduce the use of other resources. We invested in a closed-loop system that recycles 100% of the water used in the extrusion process and installed energy-efficient lighting

systems. As a result, we have reduced our annual energy consumption by 8 million kWh, conserved 500 million gallons of fresh water each year and reduced CO2 emissions by 162 metric tons as of mid-2019.

After achieving Zero Waste to Landfill certification in 2015, our Hoisington plant has continued to do the rigorous work required to maintain it, remaining vigilant over resource and waste reduction, recycling and reuse. As a result, we have proudly maintained our Zero Waste to Landfill designation every year since 2015, which is a rare feat and one that demonstrates our commitment to sustainability.

Making Our Products Sustainable by Design

After improving the sustainability of our manufacturing processes, we sought to do the same for our cabling products. We took into consideration how a cable's content, performance and applications would improve human health, well-being and our shared environment – and designed specific products to do exactly that.



The Cables that Save Energy

Spurred by consumer demand, one recent development in the architectural world is the creation of Sustainable Intelligent Buildings, which link lighting, HVAC, occupancy sensing, networks, access controls, security cameras and other disparate systems to create an efficient, highly customizable environment. They are enabled by a connectivity solution called Power-over-Ethernet (PoE), which transmits power and data over a single cable that connects hundreds of smart devices.

Statistics show that such sustainable buildings are highly energy-efficient and release significantly less CO₂ into the environment. They also offer significant advantages to building operators and occupants, improving health and well-being through additional security, customized lighting, optimal temperatures and the ability to personalize the environment they live and work in.

Superior Essex is at the forefront of PoE innovation, designing and manufacturing 55 families of sustainable cabling products that are used in hundreds of PoE applications. These products include our PowerWise® solutions suite, which offers hybrid cables that power and connect digital buildings in a broad range of applications. In addition, these products are manufactured in our Zero Waste to Landfill facility.

The Cables that Contribute to a Healthy Future

In 2018, after years of working with our suppliers to obtain specifics on the chemical components of our products, Superior Essex became the only communications cable manufacturer with certified Red List-free products. That means they contain none of the 800 chemicals classed as most harmful to the environment or people by the International Living Future Institute (ILFI). Our Red List-free products can contribute to green building certifications such as The Living Building Challenge (an ILFI program), LEED v4, and the WELL Building Standard.

Red List ingredients often found in building products can be highly toxic, especially when burned, and designers are moving away from using products that include them. However, finding a high-performing, reliable communications cable that also meets stringent material ingredient standards can be challenging.

To meet those needs, Superior Essex introduced its Category 6+ Low Smoke Halogen Free (LSHF) copper cable, the industry's first Red List-free communications cable certified by UL Wire and Cable, a division of the leading safety science company Underwriters Laboratories. It is also the first product of its type to be manufactured in a Zero Waste to Landfill certified facility, and to offer an Environmental Product Declaration (EPD) and Health Product Declaration (HPD), which disclose the environmental and health impacts of its material ingredients and manufacturing process. Finally, the product also achieved Living Product Challenge (LPC) certification from the ILFI, the first such certification ever awarded to a cable manufacturer, in 2017. Achieving LPC certification for this product required rigorous investigation into, and detailed reporting of, the material compounds that make up each component of the final product, from the copper core to the outer jacketing.

The Cables Whose Contents are Transparent

Back in 2015, we became the first communications cable manufacturer to provide transparency documentation surrounding our products' environmental and human health impacts. Through our EPDs and HPDs, we set the industry precedent for sustainable cable products. Currently, 55 families of our cables proudly feature HPDs and EPDs.

We recognize that transparency is just the beginning to creating sustainable products solutions, and we continue to work diligently not just to optimize our products, but also to advocate for sustainability in our industry. To that end, we are a proud member of the Materials Carbon Action Network, the Living



SUPERIOR ESSEX

**The First and Only
RED LIST FREE
Communications Cable**

In keeping with our commitments to environmental responsibility, we devised a new cable product that increases occupant well-being by eliminating red list ingredients, while also delivering the performance and reliability our customers have come to know and expect from our products: the Category 6+ Low Smoke Halogen Free (LSHF) copper cable.

- Used to transmit 1 Gigabit Ethernet and Power-over-Ethernet throughout the built environment
- Supports In-building communications, data centers, security and access controls, and the powering and controlling of intelligent devices
- UL CMR listing allows for riser installations
- First and only cable of its type to be produced in a certified Zero Waste to Landfill facility
- Offers Environmental Product Declarations and Health Product Declarations

Product 50 Initiative's Leadership Circle, and the Sustainable Leadership Forum organized by the Cymplx Group.

Creating a Better Future for All

While successful sustainability efforts are themselves enough of a reward, Superior Essex is also proud that our initiatives have been recognized by others. We have received numerous awards in the past three years for our LSHF and PowerWise® products, Zero Waste to Landfill program and overall sustainability initiatives.

But we have no intention of resting on our laurels. In the coming year, we will update our life cycle assessment models and environmental product declarations. Sustainability initiatives will guide our actions for years to come. We will continue to expand our portfolio of sustainable products,

improve our manufacturing processes and reduce our overall environmental impact. Those and other sustainability efforts help Superior Essex make a real impact in the communities and industries we serve, setting a benchmark for responsible business and manufacturing practices.

WHITE ROSE SHOPPING CENTRE

UK'S MOST SUSTAINABLE SHOPPING CENTRE

SUMMARY

White Rose Shopping Centre is based in south Leeds and is majority owned and operated by Landsec, who are one of the largest real estate companies in Europe, with an £11 billion portfolio spanning 24 million sqft of well-connected retail, leisure, workspace and residential hubs.

White Rose provides 850,000 sqft of retail space and is home to more than 100 leading brands. It has been a vital community hub for 24 years, supporting local charities and mentoring local businesses, inspiring and encouraging school children through innovative learning activities and helping older people to maintain healthy lifestyles with daily Mall Walking.

White Rose has remained embedded in the south Leeds area during the past 12 months and vital to local life, especially for the 40% of its 3,500 employees who live in neighbouring areas. White Rose has aimed to lead the Yorkshire region in tackling critical long-term issues – from diversity and community employment to carbon reduction and climate resilience.

It has served the community throughout 2020/21 due to the number of essential retailers in occupation. As an entirely covered centre, the primary focus has been on providing a safe and secure experience for visitors both during and after lockdowns 1-3. Health and safety have been at the forefront of the past 12 months and providing reassurance to visitors through the introduction of a one way system and hand sanitising stations around the malls.

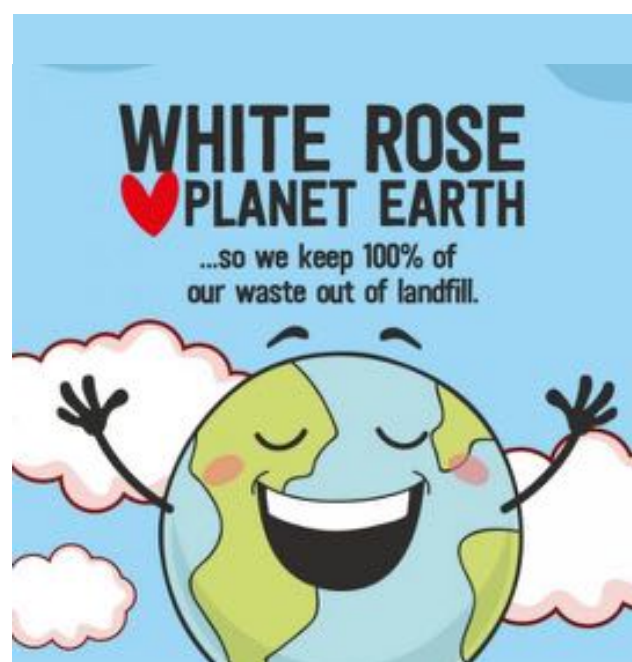
During the pandemic, White Rose has continued to support local charity partnerships including Leeds South and East Foodbank, through fundraising

events and significant monetary donations that have supported the community during hard times (creating £20,000 worth of social value).

IN DETAIL

The White Rose Centre is an out-of-town destination for retail, dining, leisure and entertainment with over 120 stores from high street favourites to specialist gems and 4,800 free car parking spaces. The Centre opened in 1997 and with further development of the Village in 2017 the White Rose is now home to Cineworld with a IMAX screen, an outdoor play area, new dining options including Wagamamas, Five Guys, Franksters, Fridays, Pizza Hut, Prezzo and Mozza's first restaurant in England.

Our objective is to become the UK's Friendliest, Accessible and Sustainably managed Shopping Centre Our links with our charity partners and community groups is what make our Shopping Centre what it is today.



Our social responsibilities are broken down into 4 sections.

Children & Families

We work with Child Friendly Leeds, The Ahead Partnership, The Morley Academy, The Stephen Longfellow Academy (Alternate Provision) and The Lighthouse School Connecting Communities Beeston Community Forum, Beeston in Bloom, Hamara Community Centre, Morley Arts Festival and South Leeds CLLD.

Health & Wellbeing

Purple, Mall Walking, Leeds South & East Food Bank, ReThink Food and Women's Health Matters Sustainable Places Churwell Environmental Group, Leeds Climate Commission, Leeds Parks & Green Space Forum, The Wakefield and Pontefract Bee Keeping Association, The British Bee Keeping Association and Zero Carbon Yorkshire

We also encourage our staff to get involved in supporting social projects and charities by giving paid time to attend and help, especially during the difficult times of COVID-19 Team Members have helped with the Royal Voluntary Society delivering PPE and Sanitiser to care homes at the start of the pandemic to delivering food, medication, and essentials to isolating families, the elderly or single people with little or no support.

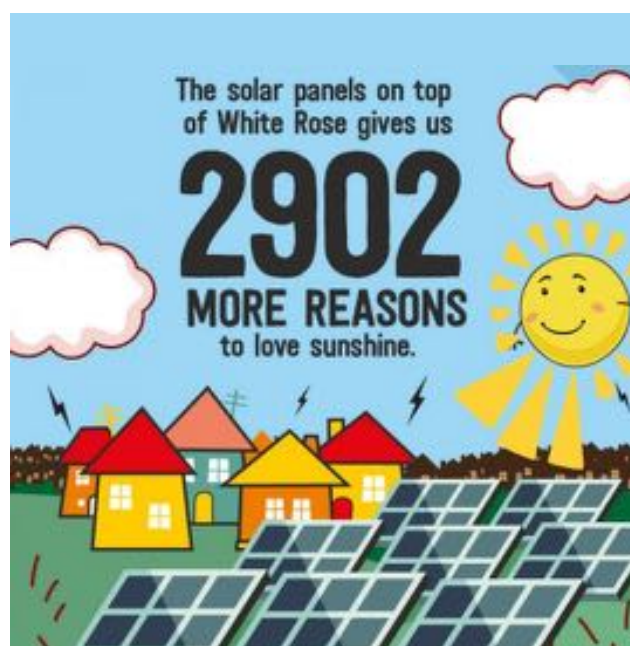
St Johns Ambulance COVID Vaccination Program.

Supporting the NHS by administering COVID vaccines, supporting administration, assisting people.

As a shopping Centre we offer

- Disabled parking bays in all eight car parks
- Free shopmobility scheme
- Changing Places facility

- Quiet Room facility
- Quiet hours every Tuesday morning (with no mall or store music)
- Free hidden disability lanyards
- White Rose is certified as a Disability Confident Committed Employer



We have partnered with Hannah Cockroft MBE as our Accessibility Ambassador.

Our Quiet Tuesdays currently take place weekly in the morning but will be expanding to a full day once a month where no music will be played within the Centre and fire alarm testing is suspended to promote a quiet, safe space for customers to enjoy reducing the risk of sensory overloads.

Our Mall Walking offers a safe, warm, and dry environment to exercise, make new friends and have fun on weekdays between 9-10am when the centre is closed to shoppers. Benefits include improved health, the opportunity to walk whatever the weather, meeting like-minded people, discount vouchers and two coffee mornings a year with raffles and free refreshments.

During the pandemic food banks are needed more than ever.

The Centres main charity partner Leeds South and East Foodbank, when COVID-19 struck the planned fundraising events had to be postponed so the Centre made an initial donation of £4,500 to the organisation as well as collecting food donations onsite. We have provided ReThink food with floor cleaning machinery to keep their warehouse clean and safe.

We are also working with them to set up a food academy to teach people about managing household budgets, manage food and reduce household waste using one of our retail units. Throughout the pandemic we have provided our charity and community partners with PPE, litter picking equipment, Sanitisers, dispensers, and face masks.

We have funded a memorial garden at a local school and for Leeds Baby Week we planted a small woodland onsite.

Waste Management and Sustainability

The White Rose Centre has always pushed to develop ways to manage waste in an efficient way maintaining our zero-landfill promise.

Working with our service delivery partners (Mitie) to ensure all our employees and retailers are kept up to date on current best practice and legislation. Delivering training to our retail partners with visual aids like posters, colour coding and clear labelling has improved understanding of our waste streams.

Following a turbulent year within our sector we have had to review and manage costs and deal with changes at very short notice. Improving sustainability should be at the top of everyone's agendas moving forward.

When we started this project the life span of our food digester was nearly up. We had a waste to

water machine for 5 years and looking at how technology had changed as well as keeping an eye on legislation changes in Scotland, Wales, Northern Ireland, and the Republic of Ireland, we decided to move away from Waste to Water machines. After looking around we found that no matter what machine we fitted we would still need to have the residue removed from site alongside food waste that cannot be digested. ReFood was the most cost-effective option, by providing disinfected bins that can go within units for food waste our retail partners have found this to be beneficial. We have removed a manual handling risk from tipping food caddies into a food machine. This means that staff can be redeployed to front line roles in the centre ensuring the centre is COVID safe.



The potential savings from changing to ReFood mixed with energy, water and labour costs would be around £46,000 per year as well as producing power with Anaerobic Digestion. With the introduction of the new food bins and working with the retailers we have colour coded and clearly labelled our waste streams creating a visual guide for staff and retailers on site to follow. We have worked with all retailers by offering support and training rather than the threat of fines and have found it to be very successful.

The White Rose has had to carefully manage our outdoor spaces as they provide habitats for birds, hedgehogs, bugs, bats and bees. Our 2 water features include reed beds that provide habitats for King Fishers, Coots, Finches, Mallards and Herons.

The numbers and sizes of fish within the water has had to be managed to ensure that the birds food source is protected. Our beehives are on the Centres roof and are home to a mix of Buckfast bees and European honeybees we work with a local beekeeper and have joined the British Bee Keeping Association to receive training.

The centre is surrounded by agricultural land and our bees are vital pollinators to that and the surrounding gardens and wild spaces. We also created wildflower meadows on site instead of manicured lawns as part of this project. As the project went on, we wanted to reduce the amounts of chemicals used on site. To do this we reviewed how we clean our floors and invested around £54,000 into new battery powered machinery for inside and outside of the Centre.

The use of ec-H2O technology from Tennant and floor pads we have managed to remove chemicals from cleaning the main floors within the centre. We removed 2 diesel powered external sweeping

machines for 2 battery powered ones that deliver a more versatile clean around the site.

The change has also saved around £6,000 per year in fuel costs.

The Centre offers free electric vehicle charging points for all our customers and staff with a planned increase in charge points planned. The centre has installed new LED lighting across the entire site that consumes up to 90% less energy than traditional bulbs. The installation project, saw new lighting installed in the shopping malls, car parks and perimeter roads.

The centre has 2902 solar panels on the centre roof that generates 680,000 kWh per year (200 homes worth of power for 12 months) This has resulted in a 20% reduction in electricity use year on year. The success of the project so far has not only benefitted all the Retailers on site as it helps to uphold their own bespoke environmental policies that in most cases are in place from a corporate level.

The centre has benefited with regards to ensuring they are fulfilling their environmental obligations. We have created and maintained some beautiful open spaced for customers and staff to enjoy.

The centre takes immense pride in knowing that we have also contributed to reducing some of the following issues:

1. Harmful chemicals and greenhouse gasses are released from waste in landfill sites.
2. Recycling helps to reduce the pollution caused by waste.
3. Not just saving energy but creating energy.
4. Habitat destruction and global warming are some the effects caused by deforestation.
5. Recycling reduces the need for raw materials so that the rainforests can be preserved.



6. Larger amounts of energy are used when making products from raw materials. Recycling requires much less energy and therefore helps to preserve natural resources.
7. Reduce financial expenditure in the economy. Making products from raw materials costs much more than if they were made from recycled products.
8. Preserve natural resources for future generations. Recycling reduces the need for raw materials; it also uses less energy, therefore preserving natural resources for the future.

Over the last 24 plus years the White Rose Shopping Centre has positioned itself to be at the heart of the community we have strengthened current relationships, built new relationships, developing best practices and will continue to push and improve the area well into the future.