# ENVIRONMENTAL BEST PRACTICE

## The Green Book: Volume 29

**A valuable work of reference acclaimed around the world**

**Published by The Green Organisation**
**Hundreds of pages of successful case histories**
**Helping the environment since 1994.**

First published: 2025



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THE GREEN ORGANISATION

# Setting the standard...

## The Green Book is the world's only annual 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 Apple 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 work of reference 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.

**The Green Organisation**

**www.thegreenorganisation.info**

# Environmental Best Practice
Volume 29

# INDEX

## A

# Environmental Best Practice
Volume 29

# A

## AMBIPAR GROUP

**Eco-Alcohol**

**Page 44**

The project emerged during the COVID-19 pandemic in Brazil, addressing alcohol shortages by creating a decentralised ecosystem for alcohol production and consumption. The initiative reduces CO2 emissions, recycles waste, and supports sustainability across industries.

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## AmeySRM

**A533 Expressway Replacement Bridge Scheme**

**Page 47**

The £27m National Highways project successfully replaced the A533 bridge over the M56 in Cheshire, minimising disruption and enhancing safety. Achievements include improved biodiversity, and efficient waste recycling, setting a benchmark for future projects.

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# Environmental Best Practice
Volume 29

A

## ARDMORE

**Carbon Reduction Strategy**

**Page 50**

Ardmore's decarbonisation project achieved a 19.4% carbon reduction in Year 1, with initiatives like green electricity, hybrid generators, and HVO biofuel. Year 2 is on track for a 36.7% reduction. Empowering staff to lead sustainability efforts, Ardmore is driving towards its 2035 Net Zero target.

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## ATLASEDGE AND NORTHSHORE

**Sustainable Future for Data Centres**

**Page 53**

In 2023, AtlasEdge Data Centres partnered with Northshore to drive sustainability across Europe. Together, they identified 126 energy and water efficiency improvements, saving 65m tons CO2e in 2024. Projected savings include 4 million kWh annually by 2025-2026.

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# A

## AVIVA

**St Helen's Decommission - Furniture and IT**

**Page 56**

As part of Aviva's St Helen's HQ decommissioning, 67% of 8,993 furniture items were reused or donated to schools and NHS charities, with 32% recycled and zero waste to landfill. IT equipment was redeployed, refurbished, or recycled, showcasing Aviva's sustainability commitment.

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B

## BAHRAIN NETWORK (BNET) B.S.C CLOSED

**BNET's Environmental Initiatives**

**Page 59**

BNET has implemented comprehensive sustainability efforts, including energy-saving initiatives, renewable energy adoption and participation in Earth Hour. They also focus on waste management and reducing their carbon footprint through eco-friendly refrigerants and energy-efficient technologies.

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## BARRATT EAST LONDON

**Barratt London - Wembley Park -Building Up Sustainably**

**Page 62**

Barratt Developments' Wembley project, comprising five buildings, emphasises sustainability through green spaces, tree planting, and a green roof. Using CFA construction and HFO vehicles, it prioritises waste reduction, material reuse, and recycling to achieve zero landfill.

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# Environmental Best Practice
Volume 29

B

## THE BERKELEY HOTEL

**The Berkeley Recycling Challenge**

**Page 64**

The Berkeley Hotel's recycling initiative transformed waste management, with the recycling rate soaring from 36.9% to an impressive 92.7% in just over a year. The hotel introduced specialised recycling streams, setting a new standard in hospitality.

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## BLUEWATER SHOPPING CENTRE

**Leading Best Environmental Practice in Retail**

**Page 69**

Bluewater, a leading retail and leisure destination, has prioritised sustainability since 1999, implementing a robust programme for energy reduction, biodiversity enhancement, and waste management to minimise its environmental footprint.

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B

## BUCKLES SOLICITORS LLP

**Buckles' waste management sustainability project.**

**Page 72**

Buckles has driven firm-wide sustainability since 2014, achieving waste reduction, recycling, composting, and a paper-lite initiative. With litter picks and an EV salary scheme, Buckles actively engages staff in its net zero commitment.

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## BUTTERMARKET CENTRE - CUSHMAN & WAKEFIELD

**Buttermarket Waste Management**

**Page 76**

The Buttermarket's Waste Management plan successfully achieved key sustainability goals, including reduced carbon footprint, cost savings, and local economic support. Partnering with local businesses, the centre reduced tenant costs by 23%, minimised environmental impact, and optimised waste management onsite.

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C

## CHEVRON GREEN SERVICES

**Replanting the A14**

**Page 79**

Chevron Green Services, alongside National Highways and Ringway Infrastructure Services, proudly revitalised the A14 in Cambridgeshire. Their innovative replanting strategy, featuring biodegradable tree shelters, advances biodiversity goals and showcases early signs of plant success.

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## COGNITION LAND AND WATER

**The Barking Power Station Gas Pipeline Decommissioning Project**

**Page 82**

Cognition Land and Water completed the decommissioning of the Barking Power Limited gas pipeline in 2023, achieving a £6.4M project that reduced embedded carbon by 71% while enhancing community relationships.

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# Environmental Best Practice
Volume 29

C

## CPL/PURAGEN ACTIVATED CARBONS

**PFAS Forever Chemicals -**
**“Search, Capture & Destroy”**

**Page 85**

The “Search, Capture & Destroy” project successfully removes and destroys forever chemicals from water using innovative technology, ensuring sustainability and efficiency, while the new FiltraCarb® CH range enhances water treatment solutions for a healthier environment.

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## CROWN WORKSPACE LTD

**Putting Circular Economy at the Heart of the Workplace with Crown Circulate**

**Page 88**

Crown Workspace champions a low-carbon, circular economy approach through its Crown Circulate initiative, transforming workplace services. By remanufacturing furniture and IT equipment, it has saved over 17,000 tonnes of CO2 and generated £1.9 million in social value.

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D

## DARK SKY ASSOCIATION

**Dark Sky Alqueva: a mission to protect the night sky**

**Page 92**

The organisation expanded its mission by integrating Dark Sky Alqueva, broadening its reach and protecting more territory. Their brand concept is now replicable, leading to the creation of Dark Sky Portugal, which includes Alqueva and a northern destination, Vale do Tua, further promoting environmental preservation.

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## ENCORE ENVIRONMENT

**Project DIVERT**

**Page 95**

E

Project DIVERT challenges traditional waste disposal in construction by repurposing materials for reuse in the circular economy. It diverts waste to local organisations, creating social value, reducing carbon emissions, and cutting costs. Over 100 tonnes of waste have been repurposed, saving £60,000 for 105 beneficiaries.

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F

## THE FLOORBRITE GROUP LTD

**Supporting The TIP Group in Managing Specialised Waste Streams**

**Page 100**

Since 2017, The Floorbrite Group has proudly partnered with The TIP Group, expanding to 33 sites and achieving remarkable milestones in 2023, including recycling 115 trailer curtains and 17 tonnes of workshop waste.

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## FLOURISH AND SHINE INITIATIVE

**Flourish and Shine Initiative**

**Page 104**

The Flourish and Shine Initiative aims to beautify and promote sustainability in marginalised communities through volunteer-led gardens, contractor-led renovations, and eco-friendly infrastructure. By integrating innovative technologies like solar harvesting asphalt and water purification systems, the initiative enhances living conditions and creates self-sustaining, resilient neighbourhoods.

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## FROG ENVIRONMENTAL

**UK's First Sustainable 'Rain Ready' Water Treatment System for Environmental Protection**

**Page 108**

Frog Environmental is innovating sustainable silt management solutions for the construction industry. Their 'Rain Ready' water treatment system lowers CO2 emissions and improves biodiversity. Collaborating with contractors, they have developed biodegradable, reusable systems that exceed water quality standards.

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# Environmental Best Practice
Volume 29

G

## G-COVE TECHNOLOGY GROUP

**Innovation in Plant-based Molded Fiber Technology That Replaces All Single-use Plastics**

**Page 112**

G-COVE's project aims to eliminate single-use plastics through innovative, sustainable packaging solutions. Over 7 years, it reduced plastic usage by 7 million tons, cut carbon emissions and decreased energy usage. The project includes eco-friendly technologies, such as biodegradable fiber extraction and a bio-waste processor for fertiliser production.

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## GALLIFORD TRY

**Tophill Low Water Treatment Works**

**Page 116**

Galliford Try repurposed 25,050 tonnes of historic waste at Tophill Low Water Treatment Works, saving £3 million, reducing CO2 by 105 tonnes, and creating accessible viewing platforms and a major wildlife habitat.

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G

## GEORGE YARD SHOPPING CENTRE

**Let's Embrace Change and Help the World**

**Page 120**

Through innovative waste reduction and recycling, George Yard centre has achieved an impressive 82% recycling rate. They minimise food waste, reduce carbon emissions, and support the community through initiatives like the Artisan Market and on-site foodbank.

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## GLASDON GROUP LIMITED

**Origin Range of Environmental Litter and Recycling Bins**

**Page 123**

The Glasdon project successfully designed two models of external litter and recycling bins with a 110L capacity, made from 86% recycled materials. The Origin Curve and Origin Horizon bins are now specified for parks and leisure venues.

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H

## HANG TUAH JAYA MUNICIPAL COUNCIL

**Hang Tuah Jaya Low Carbon Green Ambassador Programme**

**Page 127**

This initiative focuses on raising awareness and fostering a sense of belonging among municipal staff. Under the 'Education for Sustainability Development' flagship, it aims to enhance climate change knowledge and support Hang Tuah Jaya City's goal of reducing carbon by 45% by 2030.

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## HULL COLLEGE

**Rising Tides, Rising Minds**

**Page 129**

The "Rising Tides, Rising Minds" project by Hull College empowers over 2,650 students and 200 staff with vital sustainability skills, fostering community resilience and addressing climate challenges in the flood-prone Humber region through practical training and business collaborations.

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## INDURENT

**Fruit Trees, Wildflowers and Herbs**

**Page 134**

Heywood Distribution Park enhanced biodiversity by planting fruit trees and wildflowers, supporting the site's beehives and other pollinators. The initiative created three new areas for tenants to enjoy. Future plans include adding picnic benches and providing fruit and tree cuttings to local community groups.

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J

## JOHN O'CONNER LTD

**Bee Corridor – Letchworth**

**Page 137**

The 'Bee Corridor' project in Letchworth promotes biodiversity by planting bee-friendly flora to support pollinators. Local communities, businesses, and schools were involved in activities like guerrilla planting and educational events, enhancing environmental awareness and creating sustainable habitats for bees.

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K

## KALYON ENERJI YATIRIMLARI A.Ş

**Sustainable Green Energy**

**Page 141**

Kalyon Enerji focuses on sustainability with solar and wind projects, ESG reporting, climate risk assessments, and community development. They have implemented sustainable grazing under solar panels, supported by international certifications, employee welfare initiatives, and contributions to local socio-economic growth.

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L

## LINXON

**London Power Tunnels SF6 free GIS installation**

**Page 144**

Hitachi Energy and Linxon are enhancing the London Power Tunnel to ensure reliable, clean electricity. By utilising EconiQ™ 420-kV technology without SF6, they minimise environmental impact and support net-zero goals.

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## LONDON GREEN BRIDGE

**Walks For Unity**

**Page 146**

Launched in December 2021, the London Green Bridge Initiative brings together communities to bridge the environmental knowledge gap, promoting green energy and sustainable development through vibrant workshops, tree planting, and exciting partnerships.

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# M

## MANCHESTER AIRPORT GROUP

**Biodiversity Enhancements & Engagement**

**Page 148**

MAG enhances ancient woodland diversity by collecting seeds from key species, promoting vibrant ecosystems, and energising staff with engaging environmental activities and seed distributions for a greener future.

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## MICROBIO.WORLD

**MicroBio.World®**

**Page 151**

Microbio.World® harnesses the microbiome of Brazil's Atlantic Rain Forest to create innovative products that promote environmental sustainability. Their offerings include bioremediation, water and air purification, pest control, agricultural enhancement, and health-promoting solutions for various industries.

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# M

## MILL GATE SHOPPING CENTRE

**Energy Consumption Saving Scheme**

**Page 154**

The project aimed to replace outdated LED lighting with efficient systems and sensors, achieving a 51.66% energy reduction, 95.3 tonnes of CO2 savings, and £23,060 in operational cost savings since 2016.

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## MITIE LANDSCAPES

**Space for Nature - Biodiverse Landscape Transformation Project**

**Page 156**

The Space for Nature project aim was to boost biodiversity by 20% across its UK production sites, ensuring product purity while collaborating with Mitie and Biora. The innovative designs celebrate nature, engaging staff and supporting local wildlife.

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M

## MITIE WASTE & NETWORK RAIL

**Mini-Materials Recycling Facility at Euston Station**

**Page 159**

Mitie Waste's mini-MRF system at Euston station reduced waste costs by 50%, increased recycling, and saved over 11,000 tonnes CO2e annually. The system is expanding to Birmingham New Street, with plans for wider roll-out and accurate billing.

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N

## NEW TAIPEI CITY ENVIRONMENT PROTECTION DEPARTMENT

**Create a Powerful and Efficient Environmental Protection System**

**Page 161**

This project established Taiwan's "New Taipei Environmental Special Action Team," tackling 268 environmental crimes, cleaning up toxic waste, and significantly improving Tamsui River health, restoring its ecology and reducing pollution.

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## OLLECO & NATIONAL TRUST

**Putting Rural Food Waste Collections on the Map for the National Trust**

**Page 164**

The National Trust, dedicated to preserving the UK's natural treasures, is tackling the challenge of unused milk from its cafes. By educating staff and partnering with waste contractors, they're transforming waste into a sustainable success story for aquatic ecosystems.

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# Environmental Best Practice
Volume 29

P

## PARC TROSTRE RETAIL PARK

**'Encouraging Wildlife through Nature & Sustainability' initiative**

**Page 168**

Parc Trostre boosted biodiversity by creating vibrant wildlife habitats, engaging the community with planting initiatives, and installing bird and bug hotels, all while championing sustainability and environmental awareness.

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## PT KILANG PERTAMINA INTERNASIONAL RU V BALIKPAPAN

**EKOKILANG Green Footprint in Change**

**Page 172**

The EKOKILANG programme plants 10,408 trees across 104.08 Ha, absorbing 173,069 tons of CO2 to combat global warming. It empowers local communities, supports biodiversity, and aligns with green city initiatives.

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## QATAR MUSEUMS

**First Ever Museum in Middle East Achieving Carbon Neutral Certification**

**Page 175**

The National Museum of Qatar blends cultural heritage with sustainability, featuring energy-efficient design, solar power, and water conservation. NMOQ leads in sustainable practices, promoting environmental awareness through interactive programmes and carbon-neutral operations.

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## RECOFLOOR LTD

**A Sustainable Collection and Recycling Service for Commercial Waste Vinyl Flooring Across the UK**

**Page 179**

Recofloor has transformed vinyl flooring waste management since 2009, diverting over 7,173 tonnes from landfills and saving 8,415 tonnes of CO2, while fostering industry sustainability and collaboration with key stakeholders.

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## REFEX INDUSTRIES LIMITED

**Coal Ash Management**

**Page 182**

Refex Industries Limited (RIL) has been managing coal ash since 2018, diverting 8.8 million MT of ash from landfills through eco-friendly disposal and recycling. Their initiatives include mine rehabilitation, cement production, road construction, and pollution control, reducing carbon emissions, water usage and land contamination.

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S

## SECURIGROUP

**SecuriGroup's Environmental Initiative**

**Page 186**

SecuriGroup's sustainability project focuses on environmental stewardship, achieving ISO 14001 and PAS 2060 certifications. Key successes include a 15% carbon footprint reduction, a 35% electric fleet transition, and planting over 2,000 trees.

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## SEOCHO-GU DISTRICT OFFICE

**Realising Environmental Conservation in the Heart of the City: BangbaeSUP (Forest) Library**

**Page 190**

BangbaeSUP Library, opened in 2023, promotes environmental awareness through its eco-friendly design and sustainable programmes. It educates residents on climate change, reduces carbon emissions, and integrates green practices like solar power and waste reduction, creating an environmentally conscious community.

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# S

## SEONGDONG-GU OFFICE

**Seongdong-type Smart Shelter**

**Page 194**

Seongdong-gu's smart bus shelters, installed at 55 bus stops, have led to increased public transportation use and high resident satisfaction. Equipped with eco-friendly features, safety measures, and energy-saving systems, the shelters enhance user comfort and security while reducing crime and energy consumption.

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## SGN

**Oban Biodiversity Improvement Project**

**Page 197**

In March 2023, a biodiversity project at Oban transformed the landscape by planting over 170 trees, creating a vibrant wildflower meadow, and installing nesting and bat boxes, significantly boosting biodiversity.

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S

## SinAmor FILMS

**Green SuperHeroes 2030**

**Page 200**

A team of 10 young environmentalists, aged 5 to 17, tackle global ecological challenges through various projects. Their journey, guided by expert hosts, highlights their work to combat plastic pollution, deforestation, and climate change, inspiring global environmental action.

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## SONY UK TECHNOLOGY CENTRE

**Building a Sustainable Future for all Through a Holistic Approach to Strategy with a Whole Team Approach**

**Page 204**

Sony UK Technology Centre in Pencoed champions sustainability through employee engagement and education. Celebrating achievements like a 27% reduction in electricity use, zero waste to landfill, and Green Dragon Level 5 accreditation.

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S

## THE SWAN CENTRE, EASTLEIGH

**Nighttime Savings**

**Page 208**

The Swan Centre's nighttime savings project proudly achieved a 38.8% reduction in nighttime electricity usage, translating to over £17,000 in savings. Combined with a 10% daytime reduction, total savings exceeded £38,000.

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## SWCORP MALAYSIA

**Evaluation of Pre-event Awareness Through Social Media and Effective Sustainable Waste Management**

**Page 210**

The waste management and awareness campaign during LIMA 2023 on Langkawi Island aimed to promote responsible waste disposal, focusing on separation, recycling, and waste reduction. The initiative contributed to sustainability goals and reduced environmental impact.

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## SYSCO

**Delivering a Better Tomorrow**

**Page 213**

Sysco GB has launched an ambitious sustainability training programme for its 8,500 employees, focusing on waste reduction, recycling, and sustainable food systems. This initiative has led to a reduction in waste and improvements in environmental impact, with a focus on local supply chains and long-term goals for carbon emissions and renewable energy.

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# Environmental Best Practice
Volume 29

T

## TRAFFORD CENTRE & JOHN O'CONNER

**Trafford Centre - Manchester**

**Page 216**

The Trafford Centre project enhanced Wilderspool Woods with wildlife habitats, improved water quality, created educational spaces, engaged the community, and supported local food banks through honey production, fostering sustainability.

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## TRUSTGREEN

**Biodiversity Net Gain (BNG) Ready**

**Page 221**

Trustgreen champions sustainable practices through Biodiversity Net Gain. Their achievements include in-house expertise, educational initiatives, and community engagement, setting new standards in environmental stewardship.

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T

## TUSKER

**The Green Car Scheme**

**Page 224**

Tusker is dedicated to reducing environmental impact, now offering over 80% electric cars and 14% hybrids. Their innovative offsetting strategy actively removes carbon, supporting global projects and a UK tree buddying initiative.

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# A GANG OF THREE

## ALLUVIAL DECODER (CITY OF RALEIGH STORM MEMORIAL)

### INTRODUCTION

Alluvial Decoder is a site-specific art installation along the City of Raleigh's greenway, situated on the banks of Crabtree Creek. Designed to flood regularly, the project uses flood markers, a "decoder" data tool, and a reintroduced native meadow to transform the site while telling the story of its history. The installation promotes biodiversity, enhances stormwater resiliency, and sparks important conversations about development near waterways. Beyond its environmental and educational benefits, *Alluvial Decoder* has become a destination for visitors drawn to its artistic value. With a budget of just $50,000 and a two-acre site, the project was created with an immersive experience in mind, not just an object for viewing. All design work was done pro bono to maximise both impact and quality.

The project has been recognised with numerous accolades, including being shortlisted for the 2023 International Award for Public Art and receiving awards such as the 2023 Architect's Newspaper Editors' Pick and the 2023 Google Geo for Good Impact Award. Additionally, it was honored with multiple American Planning Association (NC) Great Places in North Carolina Awards for both Public Art and Transformation, as well as the 2023 American Institute of Architects (NC) North Carolina Merit Award and the 2022 Raleigh Medal of Arts.

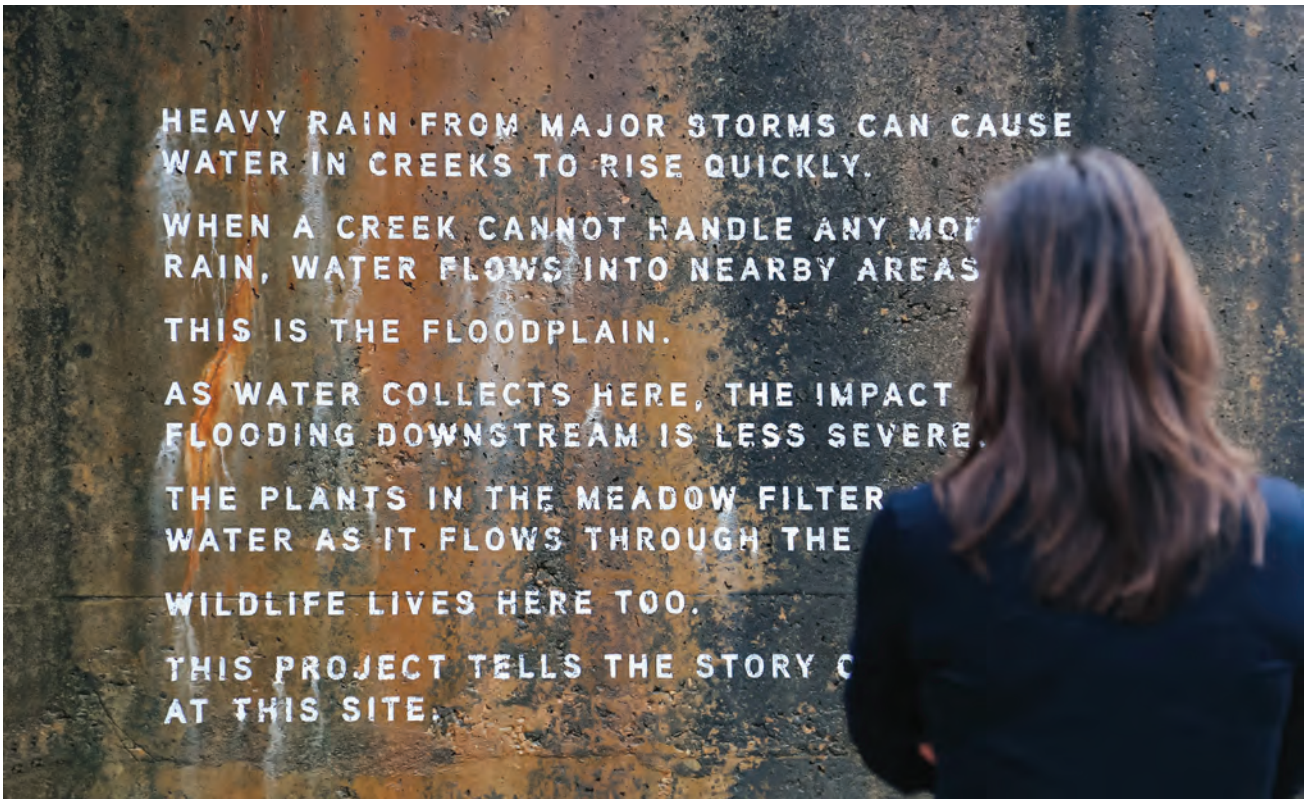
## IN DETAIL

Designed to raise awareness of the floodplain, the project features groves of color-coded pylons that mark historic flood heights, making the site accessible to both pedestrian and vehicular traffic. Graphic elements in the underpass decode these markers, while reintroduced native meadow landscaping helps restore riparian zones along the creek. The project is designed to flood regularly, serving as a reminder of the site's relationship with water.

Through the use of flood markers, the "decoder" data tool, and native meadows, Alluvial Decoder tells the story of the site's history while enhancing stormwater resiliency, promoting biodiversity, and encouraging thoughtful development. This initiative not only improves ecological awareness but also brings attention to critical environmental issues, such as the dangers of irresponsible urban development near waterways and the impacts of climate change.

Despite a limited budget of $50,000 for a two-acre site (just 57 cents per square foot), the project achieved a significant impact. The focus was on creating meaningful experiences rather than just objects. The installation highlights forgotten or overlooked stories, transforming them into an engaging and educational public space. The project's success illustrates that powerful design doesn't have to be expensive; it can be impactful, accessible, and democratically available for the public good.

Since its completion, Alluvial Decoder has sparked renewed interest in this section of the greenway, raised awareness of flooding and stormwater management, and fostered important discussions about responsible development. It has become a destination for both environmental education and art appreciation. Importantly, the project was funded entirely by the City of Raleigh through a public art RFQ specific to a "Floodplain Creative Education Display," with no design or contractor fees taken. This funding model ensured that every dollar contributed directly to the realisation of the project.



Testimonials highlight the installation's impact, with *Alluvial Decoder* providing a tactile and immersive educational experience. It helps visitors understand Raleigh's floodplain and the real-world consequences of storm events. As an art piece, it does more than educate—it encourages active engagement with issues surrounding climate justice, urban ecology, and sustainable development.

In the words of Kelly McChesney, Public Art Director at Raleigh Arts, the project's success lies in its careful execution within constraints, blending art, education, and environmental stewardship. Alluvial Decoder is a powerful example of how even modest projects can create meaningful, lasting impacts on communities, offering opportunities for learning and reflection on the pressing environmental challenges we face.

# AD PORTS GROUP

## ENVIRONMENTS ACTIVITIES/PROJECTS WITHIN AD PORTS GROUP

### INTRODUCTION

AD Ports Group has consistently demonstrated a strong commitment to environmental sustainability through a series of impactful initiatives. These efforts span a diverse range of activities aimed at fostering environmental protection, raising awareness, and directly engaging communities. From beach clean-ups and tree planting to educational camping events and awareness campaigns, AD Ports Group's dedication to sustainable practices is evident. Their efforts have not only reduced waste and promoted renewable resources but also engaged thousands in meaningful environmental stewardship. The following achievements reflect AD Ports Group's leadership in sustainability.

## IN DETAIL

AD Ports Group has demonstrated unwavering dedication to environmental sustainability through a variety of impactful initiatives. These efforts have not only contributed to environmental protection but have also played a significant role in raising awareness and fostering community engagement. One such initiative, the Wingfoil Racing World Cup at Khasifa Island, brought together 45 participants for a beach clean-up, directly supporting the protection of marine environments. Similarly, the Water Bottle Consumption Reduction Initiative replaced single-use plastic bottles with reusable options, benefiting 60 individuals and promoting responsible consumption.

Additionally, the group organised two camping events for school students, engaging 85 young minds in environmental education, while a community visit encouraged sustainable practices among 105 individuals. The planting of 20 trees across Fujairah Terminals further underscored the group's commitment to improving local environments. Their partnership with the Emirates Environmental Group for a desert clean-up campaign reached 1,000 people, raising awareness about desert conservation.

The group also engaged 5,000 participants during Earth Hour, promoting the importance of energy conservation, and further heightened environmental awareness through activities on World Environment Day and World Energy Day. With an emphasis on energy efficiency, 500 participants learned about renewable resources and carbon emissions reduction. Through their Discovery Scuba Diving initiative, AD Ports Group reached 220 participants, fostering awareness on the importance of protecting the marine environment.

# AMBIPAR GROUP

## ECO-ALCOHOL - ECOLOGICAL ALCOHOL MADE FROM WASTE FROM THE FOOD INDUSTRY

### INTRODUCTION

The objective of this project is to develop a more sustainable waste management route for carbohydrate-rich by-products such as sugar, soy, and corn, shifting away from traditional landfill disposal. The goal is to create a valorisation route that aligns with ESG (Environmental, Social, and Governance) principles, delivering environmental, social, and economic benefits to companies like Mondelez (sweets and cookies), Natural One (natural juices), and copersucar (sugar), which partnered with Ambipar's Research, Development, and Innovation (R,D&I) department. Ambipar's "Innovation Hub" focuses on creating waste recovery solutions based on the circular economy.

Over two years, the team developed an innovative route for waste recovery, turning it into high-value "ecological alcohol" for cleaning or vehicle refueling. This process also helps reduce CO2 emissions, with an estimated reduction of 1.12tCO2e per 1,000 liters of eco-alcohol produced. The initiative includes 100% recycled alcohol packaging and transportation, further enhancing sustainability.

The project emerged during the challenging COVID-19 pandemic, when alcohol-based sanitisers became scarce, leading to high demand and inflation. In response, Ambipar donated large quantities of ecological alcohol to healthcare workers in São Paulo's interior, creating a decentralised production and consumption

ecosystem. This initiative also engaged volunteers and public regulatory bodies. Additionally, Ambipar developed a gas station on-site to supply its corporate fleet with ecological alcohol. The station, which can produce up to 4,000 liters per day, features a fully automated system for monitoring and safety.

## IN DETAIL

This project was initiated in response to the severe shortage of sanitising alcohol during the early stages of the COVID-19 pandemic in Brazil. As demand surged, cleaning alcohol became scarce and its price inflated. In response, Ambipar developed a decentralised production system for ecological alcohol, turning waste from food production industries into a sustainable solution. This initiative helped alleviate the sanitiser shortage while offering a circular economy approach to waste valorisation. By engaging volunteers, regulatory bodies, and local communities, the project created a resilient system that addressed both the immediate crisis and long-term sustainability goals.

The project focused on waste from companies like Mondelez (sweets and cookies), Natural One (natural juices), and copersucar (sugar), all of which produce waste rich in starch and sugar. These materials were fermented to produce eco-friendly alcohol, which could be used as a cleaning agent or even as fuel for vehicles. The project aligns with circular economy principles by converting waste into high-value products, thereby reducing the need for traditional landfill disposal.

The production of eco-alcohol results in an estimated reduction of 1.12 tons of CO2 equivalent (CO2e) per 1,000 liters produced. In addition, 100% recycled alcohol packaging is used, and the project aims to minimise transportation emissions, enhancing its sustainability even further. By focusing on waste reduction and carbon footprint mitigation, the project contributes to global climate change efforts.


As part of the initiative, Ambipar also built an on-site refueling station to supply its corporate fleet with eco-alcohol. The station has a production capacity of 4,000 litres per day and operates as a pilot project at 40% capacity, with plans to scale up to full capacity by August 2024. This station shows how companies can use sustainable solutions to meet their operational needs without relying on traditional, non-renewable fuel sources. The alcohol produced powers vehicles without the need for modifications to the fleet, showcasing the scalability and practicality of the solution.

The project also demonstrates that even when waste is located 200 to 300 kilometers away from the production plant, the process remains economically viable. The high sugar content of the waste makes it feasible to transport and convert it into eco-alcohol. The system produces between 150 and 250 liters of neutral alcohol per ton of raw material, with an added value of R$ 3.20 per liter, making it a cost-effective solution for industries generating waste.

This initiative offers a sustainable alternative to traditional waste management practices. Waste from sugary drinks, confectionery, and expired food (e.g., breads, cakes, and snacks) can now be repurposed into eco-alcohol, reducing landfill waste and associated disposal costs. The project is more advantageous than other sustainable methods like composting, which are often costly and limited by regulatory restrictions, particularly for expired food waste.

Furthermore, the project ensures brand protection and product traceability. In industries where expired products could be illegally resold, the system ensures safe and regulated use of waste materials.

With online monitoring, Ambipar guarantees compliance with regulations and offers transparency in the entire process, ensuring products do not enter unauthorised supply chains.

This project is a step forward in circular economy practices, providing significant environmental, social, and economic benefits. It offers a sustainable solution for waste recovery, reduces CO2 emissions, and creates valuable products from materials that would otherwise be discarded. By scaling across industries, this initiative can help companies meet sustainability goals while addressing challenges such as waste disposal and the COVID-19 sanitiser shortage.

# AmeySRM

## A533 EXPRESSWAY REPLACEMENT BRIDGE SCHEME

### INTRODUCTION

The £27m National Highways project, funded through Road Investment Strategy 2, aimed to replace a deteriorating bridge carrying the A533 over the M56 in Cheshire. The project involved building a new bridge, demolishing the old structure, upgrading approach roads, and remodelling a junction for improved safety. This road is vital for local travel, connecting residential areas to workplaces, schools, and social activities. Any disruptions or closures due to the bridge's end-of-life condition would have resulted in significant diversions and impacted the local community.

AmeySRM, the contractor, prioritised minimising disruption, reducing congestion, and delivering the project in line with the Client's Zero Carbon Roadmap. The project saved 1,029.7t CO2e using One Click LCA and benefited local biodiversity through woodland planting and wild seed planting that reduced mowing requirements. Sustainable practices included recycling nearly all skip-based waste, using HVO fuel, intelligent generators, and energy-efficient heating and lighting systems.

Traffic management efforts kept 2-way traffic flowing for all but 4 weeks of the project, while the 97% reduction in queues during weekend closures minimised emissions from stationary vehicles. The project has won 3 awards and the outcomes are being shared internally for future initiatives.

### IN DETAIL

Throughout the scheme the team used One Click LCA to calculate the embodied carbon from the designs and to calculate the impact of design changes. Alongside of this the team also used Tracker+ to track material movements around site and from site.  Through the detailed design stage and construction, the site team focused on numerous carbon saving ideas each scoring

differently around it being the correct thing to do, embracing the emerging net zero plans of the parent companies and National Highways, and the fact of reuse often saves in cost.

During the detailed design phase, the team prioritised reusing existing infrastructure where possible, including lighting columns, road signage, and steel fencing. Reused columns were fitted with energy-saving LED lanterns instead of sodium lamps. One of the key achievements was reducing the resurfacing requirement on the M56 carriageway from 16,170m² to 3,311m² by focusing resurfacing efforts on wheel track zones. Design modifications, such as replacing drainage swales with drainage kerbs and reducing the bridge span by 3 meters, led to a reduction of 82t of concrete, 8t of steel, and 51t of CO2e. The abutment design was revised, replacing sheet piles with bored piles, saving 19t of CO2e.

The team also optimised the biodiversity of the planting scheme by introducing wildflowers and woodland plants, resulting in significant environmental benefits. Core performance targets were exceeded by 19.48%, and total performance targets exceeded by 10.28%.

A year-long effort to secure a green tariff electricity supply for the site offices proved unfeasible due to land agreement complications. Undeterred, the team implemented a solution using an intelligent HVO-fueled generator system, reducing CO2e by 349t. Additionally, 128,540 liters of HVO fuel

replaced diesel across the site. The team adopted CEMIII/A with 40% GGBS cement in all structural concrete mixes, achieving a 509t CO2e saving. Temporary works aggregates were reused multiple times, and 8,600m³ of structural fill and 12,400m³ of landscaping material were repurposed, diverting these materials from landfill.

The team also implemented carbon-saving measures such as using a new supplier to reroll and re-galvanise vehicle restraint barriers, saving 6.7t of CO2e. Road planings, totaling 960t, were recycled as 6F3 aggregate, replacing primary aggregates in the local area. The demolished bridge was processed on-site, with metals recycled and concrete crushed for reuse in nearby developments. Pile arising from mudstone strata was transported to a nearby development site, diverting 3,249t of material from landfill and reducing the need for quarried products.

Waste management was another priority, with all skip waste sent for reprocessing, achieving 99% recycling. Traffic flow planning, which had anticipated delays of up to 3.5 hours during weekend possessions, was successful, with actual delays peaking at only 7 minutes—an impressive 97% improvement. This success was attributed to a comprehensive communication strategy, involving large local stakeholders.

The scheme received several prestigious awards, including the ICE North West 2024 Constructability Award, CIHT North West 2024 Project of the Year (over £5m), and Best Practice Highly Commended CIHT North West 2024, for its effective communication strategy. The measures implemented during the project are applicable to other schemes, and a case study has been created for company-wide distribution. The team, initially without a defined carbon saving target, made significant progress toward net-zero goals and participated in the stage 1 PAS 2080 audit for accreditation. No enforcement actions were required throughout the scheme.

# ARDMORE

## CARBON REDUCTION STRATEGY

### INTRODUCTION

The ultimate aim of the project was straightforward: to achieve a significant carbon reduction in the first year, with a long-term goal of reaching Net Zero for Scope 1 and 2 emissions by 2035, specifically from the construction activities of the company. Additional goals included mapping out the company's Scope 3 emissions to identify hotspots and enable targeted reduction measures, implementing best practices and 'First for Ardmore' innovations, and enhancing sustainability awareness across the business and workforce.

The latter two objectives aimed to improve sustainability knowledge within the workforce—both on-site and in the offices—empowering staff to make decisions and suggest innovations or good practices. This approach was intended to foster ownership of emission reductions, rather than relying on a top-down mandate from project leads or Head Office.

The decarbonisation project has seen rapid success. In Year 1 (October 2022 - September 2023), the project resulted in a reduction of 443.97 tCO2e (19.4%). Key initiatives included prioritising Green Electricity Tariffs for Head Office, company premises, and all construction projects with Temporary Building Supplies. Where a mains connection was not feasible, Hybrid Generators were successfully implemented, and HVO biofuel was used.

After 8 months of Year 2 (October 2023 - present), the project is on track to reduce a further 491.4 tCO2e, representing a 36.7% reduction compared to the previous year (October 2022 - September 2023) and an impressive 48.96% reduction against the baseline year. As anticipated, site best practices are now being driven by individuals on the ground and shared across sites, rather than solely being mandated from the top. Successful initiatives include the use of Passive Infrared Lighting to reduce energy consumption in areas where it's not needed and the implementation of Punch Flywheel technology on all tower cranes that are not connected to mains power.

Looking ahead, the focus will be on the Fleet department and the use of Green Gas, continuing the company's journey toward Net Zero.

*Figure 1 Scope 1&2 Emissions Journey from Baseline to Net-Zero*

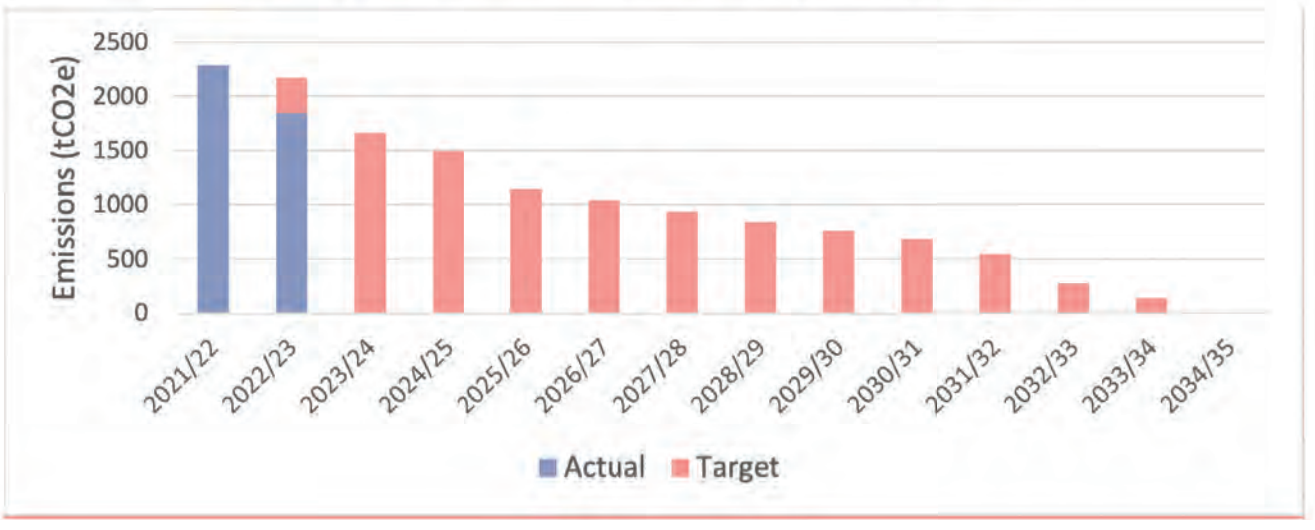
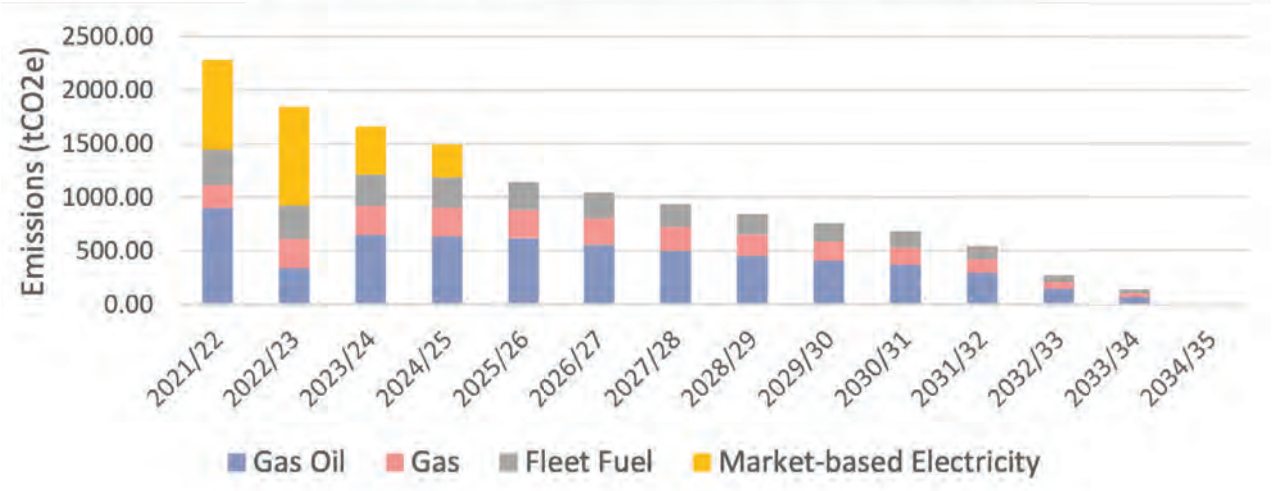


*Figure 2 Anticipated Emissions Reduction by Source to Net-Zero*




## IN DETAIL

To deliver Scope 1 and 2 reductions, the first step was to establish a Carbon Baseline to understand the areas where reductions could be made. Once this baseline was set, Carbon Footprint Ltd was enlisted for independent third-party verification and validation, ensuring confidence in the process and kickstarting the reduction journey. With the baseline in place, leaders from various business units—such as Heads of Design, Preconstruction, Procurement, as well as Directors of Construction, HSQE, and the Company—contributed to the development of a Carbon Reduction Strategy.

A key purpose of the strategy was to target immediately accessible opportunities that didn't require a drastic shift in company culture. Simple wins, such as mandating Green Tariffs when existing energy contracts expired and requiring the use of Hybrid Battery Generators where mains connections were not possible, ensured quick and significant results. These reductions were communicated throughout the business to generate momentum, encouraging projects and individuals to contribute to further medium- and long-term opportunities, ensuring a continuous journey building on this initial success.

Operating within the construction industry, we are significant contributors to both embodied and operational carbon emissions. As such, we are well-placed to identify reduction opportunities and, arguably, have a moral responsibility to limit our emissions wherever possible. With mandatory sustainability reporting requirements, such as ESOS and SECR, continuing to grow, we saw an opportunity to not only report on the data already being collected but also to use it to drive reductions and efficiencies within the business.

The project did not have a set budget initially, but upfront costs of approximately £9,000 were required for an external consultant to conduct Scope 3 emissions screening and validate the Scope 1 and 2 Baseline. This verification was deemed essential as it provided a strong foundation for the reduction journey, with an independently approved baseline to make reductions against. Before beginning the project, a presentation was made to the Managing Directors and HSQE Director to outline the project's objectives, justification, and expected benefits. Subsequently, the necessary funds were provided from within the business, demonstrating the company's commitment to sustainability.

The strategy has delivered significant carbon reductions over the 20 months it has been in place.

Simple initiatives resulted in a 19.4% reduction (443.97tCO2e) against the baseline year, and these reductions have continued into Year 2. After 8 months of Year 2 (October 2023–Present Day), the project is on track to reduce a further 491.4tCO2e, a 36.7% reduction compared to the previous year (October 2022–2023) and a 48.96% reduction compared to the baseline year.

Carbon emissions from electricity demand have decreased from 848tCO2e (2021-2022) and 922tCO2e (2022-2023) to an anticipated ~170tCO2e this year. Starting in August this year, all electricity and gas across the business and projects will come from renewable sources.

One example of success across the business is the use of hybrid generators. The initial implementation generated savings of approximately 31,000L of diesel, 85tCO2e, and £31,000 in hire and fuel costs over the 2022 calendar year. This has now been mandated across the business, with five units currently on different sites, delivering ongoing savings. Additionally, three flywheel applications, supporting tower cranes with dynamic power requirements, are now being implemented. While not groundbreaking innovations, these measures represent firsts for the business, and their implementation has been highly successful.

Measures introduced to reduce carbon emissions often bring additional benefits. For example, by utilising battery power to provide energy, hybrid generators operate for shorter periods, reducing noise and pollutant emissions. This has a positive impact on local communities around construction sites. The success of this strategy shows that simple measures can lead to significant reductions in a company's carbon footprint.

Opportunities such as Green Tariffs—some of the most immediate and achievable means of decarbonisation—should be implemented right away to begin reducing emissions, while other opportunities are identified. Key to driving reductions across the business is engaging stakeholders in positions of expertise, who can propose opportunities within their roles. This also fosters engagement and accountability for reductions.

The project has demonstrated that significant carbon reductions can be achieved even in a business that was previously not considered particularly forward-thinking with regards to sustainability. The plan is to continue with the short-term strategy through to the end of 2026 and use the success achieved thus far as leverage to explore further opportunities. With the low-hanging fruit—such as green electricity and gas tariffs—already implemented, continued reductions will likely be more challenging, requiring greater involvement and resource commitment.

A key priority moving forward is to reduce reliance on diesel and transition to biofuels or electric machinery where possible. The company has started exploring its fleet, with plans to phase out combustion engines, and has engaged a provider to offer a fleet management system designed to increase driving efficiency and reduce fuel consumption.

# ATLASEDGE and NORTHSHORE

## SUSTAINABLE FUTURE FOR DATA CENTRES

### INTRODUCTION

AtlasEdge Data Centres is a pan-European Edge data centre provider which was formed in September 2021. AtlasEdge was founded with the ambitious goal of creating Europe's leading Edge platform and one of the key strategies is keeping Sustainability at the forefront of all activities. In August 2022, Northshore was onboarded with a remit to address a broad range of sustainability issues including carbon emissions and water consumption, reducing the impact data centres have on the environment.

Northshore is an engineering consultancy and was founded to sustainably support the internet and positively impact data centre infrastructure performance. In July 2023, AtlasEdge and Northshore announced a strategic partnership to develop and implement an operational sustainability program. Northshore have supported the creation of a programme focused on measurement, tracking, and reduction of environmental impact to help benefit AtlasEdge customers and the wider community decarbonisation efforts.

The partnership sees both companies work closely assessing AtlasEdge's alignment with the EU Data Centre Code of Conduct for Energy Efficiency Implementation, creating multi-year capital improvement plans, and carrying out improvement projects. AtlasEdge and Northshore have a clear commitment to a long-term, jointly managed collaboration to manage sustainability performance.

In 2023/2024, Northshore were able to identify 126 opportunities for energy and water efficiency which have been explored in partnership and an action plan put in place. To date, we have seen a 65mTons CO2e savings over just a few months in 2024. The forecast is that the project completion in 2024/2025 will result in more than 4 million kWh in energy savings that will be realised in 2025-2026 once construction is complete. This will result in an annual estimated reduction of roughly 150 mTons CO2e.

Utilising Northshore's technology platform, data collection and validation are streamlined, enabling transparent environmental performance metrics on a portfolio-wide basis. This means all emissions and water usage is mapped against the targets for reduction and reported on in real time. AtlasEdge and Northshore have attended numerous international events sharing sustainability experiences, knowledge, and solutions to other industry providers. The partnership has strengthened sustainability discussions and focus at international events and will continue to do so.

## IN DETAIL

In October 2022, the Sustainability Programme Strategy and Execution Plan was signed off by the Board of Directors, setting out the framework, initial targets, and overarching roadmap for AtlasEdge. The plan is a living document that has been revisited and updated over time. All programmes of work are aligned with relevant standards and legislation. The KPIs laid out in the AtlasEdge Sustainability Programme for 2023 and 2024 aim to reduce the amount of CO2 produced by AtlasEdge, with forecasts for long-term reductions over the next three years. AtlasEdge signed up to the Climate Neutral Data Centre Pact (CNDCP) in 2022, a voluntary commitment to meet the Green Deal's ambitious greenhouse gas reduction goals. These targets are embedded in the KPIs, monitored, and reported on. In June 2024, AtlasEdge was audited against the CNDCP commitments and was able to demonstrate compliance with the Self-Regulatory Initiative, receiving a certificate of conformance.

Northshore conducted sustainability audits across the AtlasEdge portfolio, identifying over 126 opportunities for energy and water efficiency, such as cooling equipment replacements, retrofits, or control adjustments. These audits and opportunities resulted in a business case for a full sustainability budget, implementation plans for each site (e.g., replacement chillers, more efficient plant, retrofitted plant to reduce water consumption, and the phase-out of GWP refrigerants), mapped and verified data required to measure performance, setting targets where necessary, and tracking performance via sustainability KPIs. The sustainability monitoring and reporting have been designed to meet ESG reporting requirements and the needs of customers who must now report on supplier Scope 3 emissions. Emissions reporting is currently in place for Scope 1 and 2 emissions, and practices to measure and report Scope 3 emissions and renewable energy usage will be completed in 2024. AtlasEdge recognised early on that significant effort in an ESG programme can be spent solely on reporting. Therefore, efficiencies in data collection and visibility are critical to ensuring that actions are also implemented alongside reporting efforts. After completing audits and initial data collection in early 2023, Northshore built out sustainability dashboards that allow for real-time reporting and tracking of KPIs.

# Environmental Best Practice
Volume 29

In April 2023, AtlasEdge announced financing of €725 million. Part of this financing includes sustainability-linked targets focused on efficiency and renewable energy usage. To meet the sustainability requirements and align with the sustainability program, AtlasEdge invested over 3.5 million euros in 2023. These projects directly impacted electricity efficiency and sustainability targets, and 2024 will see substantial investment.

In 2024, the sustainability impacts of project investments at AtlasEdge are beginning to be reflected in reductions across KPIs. For example, in 2024, when looking at monthly iPUE (instantaneous Power Usage Effectiveness), a measure of data centre energy efficiency for each month, AtlasEdge started seeing a steady decrease in monthly iPUE by 3-10% compared to late 2023 across more than half of the sites. This equates to 65mTons of CO2e savings over just a few months in 2024. Below are some examples of infrastructure and energy efficiency investment projects completed or planned, which are or will result in a reduction in environmental impacts: Four sites completed retrofit projects in 2023, replacing or retrofitting older, inefficient cooling systems with energy-efficient technologies. Five sites implemented projects to optimise existing temperature or pressure setpoints for cooling systems. In some cases, unnecessary equipment was turned off based on current IT loads. Several sites replaced older UPS systems with modular UPS systems. These systems are more efficient and able to limit power use based on the actual IT load, reducing electrical losses at the sites. In 2024, three sites are undergoing a cooling system redesign and data hall re-stack to more efficiently use IT space. These projects are expected to result in more than 4 million kWh in energy savings, which will be realised in 2025-2026 once construction is complete. This will lead to an estimated annual reduction of roughly 150mTons of CO2e.

Our aim is to support the industry in developing good practice standards, liaising and collaborating with international organisations such as the Climate Neutral Data Centre Pact and TechUK. We review industry white papers and frameworks to develop our approach and implement technologies in the short, medium, and long term. AtlasEdge and Northshore regularly attend international events as guest speakers, highlighting the challenges the industry faces and sharing knowledge on how to meet regulatory requirements. In 2024, AtlasEdge was awarded EcoVadis Bronze and successfully passed an audit for certification against the Climate Neutral Data Centre Pact self-regulatory initiatives. No enforcement actions have ever been taken against AtlasEdge or Northshore.

> “Sustainability is at the core of our mission to create Europe’s leading Edge platform. This partnership with Northshore will allow us to rigorously measure our environmental impact and build a portfolio which sets the benchmark for sustainability within the European data centre industry.”
>
> Ian Hammond, SVP Operations, AtlasEdge

> “AtlasEdge is developing truly innovative solutions and workflows for deploying edge digital infrastructure, at scale. We are excited to partner with AtlasEdge and integrate Northshore’s sustainably performance platform into these workflows to streamline AtlasEdge’s ability to manage its sustainability performance, portfolio wide.”
>
> Matt Renner, Chief Executive Officer, Northshore

# AVIVA

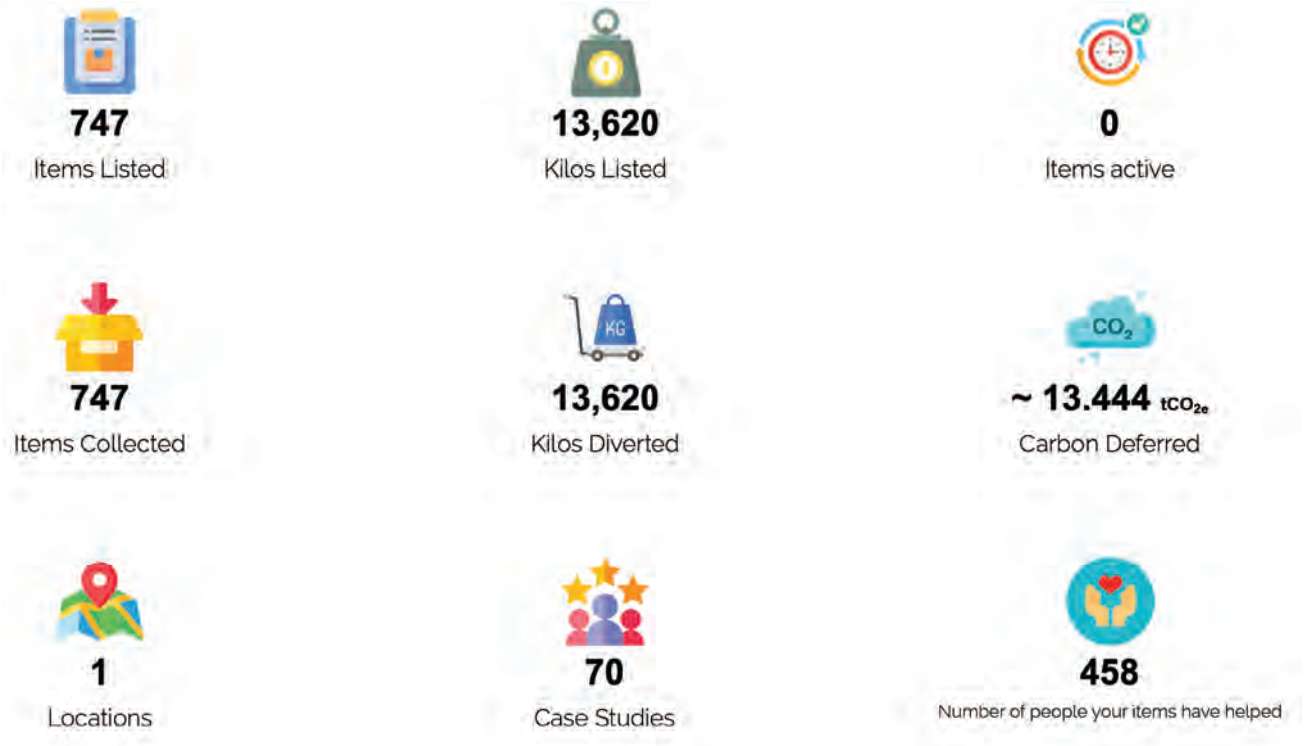
## ST HELEN'S DECOMMISSION - FURNITURE AND IT

### INTRODUCTION

In conjunction with the exit and decommissioning of St Helen's, Aviva's 23-floor London HQ in March 2024, the project aimed to maximise the redistribution and re-use of furniture and IT-related equipment, primarily across other Aviva group premises and within the local community, including schools and NHS facilities. Guided by the waste hierarchy and circular economy principles, the focus was on re-use and redistribution, or, in the worst case, repurposing composite items for recycling alongside more easily recyclable items.

A total of 8,993 office furniture items, including desks, chairs, tables, and lockers, were accounted for. Of these, 5,002 items were reused within the Aviva estate, and 747 were donated to charities, including the Business2Schools initiative and NHS charities via the Globechain portal. Other beneficiaries included St Helen's Church, Bishopsgate, and Lotus Cars. A total of 458 people were supported through donations. Additionally, 135 items of furniture and 226 commercial catering items were sold at auction to local businesses. In total, 67% of the items were re-used or redistributed.

# Environmental Best Practice
## Volume 29




2,787 items (32%) were dismantled and recycled by Business Moves Group, where raw materials such as textiles, plastics, polymers, wood, and metal were separated for efficient recycling. Less than 1% of the items couldn't be reused or recycled and were disposed of as waste, with zero waste sent to landfill.

Regarding IT equipment, 3,892 items were processed. 195 items (mainly monitors) were redeployed to Aviva home workers, 2,277 items were refurbished and re-marketed, and 1,423 items were deemed end-of-life and recycled.

### IN DETAIL

St Helen's was Aviva's 23-floor head office in the heart of London, which opened its doors in 1969. The closure and exit of the building were finalised in April 2024. The main aim of this project was to maximise the re-distribution and re-use of office furniture, catering equipment, and IT-related equipment, predominantly across other Aviva group premises and within the local community, where schools and NHS facilities could benefit from surplus, good-condition furniture.

With Aviva aiming to be Net Zero within our operations by 2030, along with carbon and waste reduction targets, the re-use and re-distribution of items aligned with our environmental, social, and commercial values. We identified areas within our own property portfolio where items could be re-used in other offices to enhance and modernise their facilities or support wellbeing. In total, 5,002 items were identified and re-distributed to 15 UK locations during the vacation period in 2023 and early 2024. There was minimal cost associated with the re-use and re-distribution of these items. Transport was arranged as part of our workplace change partnership with Business Moves Group, ensuring efficient transport by maximising load capacity on pre-defined dates between offices.

A cost saving was achieved by avoiding the disposal or recycling of these products from Aviva premises, as well as reducing the need for purchasing new items by both Aviva and the beneficiaries of our


donations. We used the Globechain re-use network portal to log and track external donations to local businesses or charities, who provided post-donation reports detailing the businesses, individuals, and environmental benefits of our contributions.

The main beneficiaries included the Business2Schools Initiative (297 items), NHS charities (274 items), Lotus Cars (161 items), and St Helen's Bishopsgate Church (15 items). It is estimated that 458 individuals benefitted from our donations, and 13.4 tonnes of CO2 emissions were prevented from entering the atmosphere. The donations resulted in 13,620 kg of items being diverted from disposal or recycling. We have used Globechain for several years to manage surplus items within our offices, and other organisations and communities can benefit from adopting the same re-use and re-distribution methods. The UK-wide platform primarily supports businesses and charities, but individuals can also receive items. The platform provides case studies after each donation to highlight the benefits.

Although this project was unlikely to be on the same scale as the St Helen's closure, we will continue to adopt these practices for future office vacations or relocations to ensure items are put to the best possible use. Once all re-use and re-distribution efforts were accounted for, 135 items of furniture and 226 items of commercial catering equipment were sold at commercial auction to businesses within the Greater London area for reuse. The proceeds from the auctioned items offset the project cost. Any items that could not be re-used, re-distributed, or auctioned were collected by BMG and re-purposed by dismantling composite items and segregating them into raw materials for easier recyclability.

This process generated the following recyclable materials:

- 10,360 kg of wood
- 9,500 kg of mixed metals
- 2,800 kg of plastic polymers Additionally,
- 1,700 kg of items containing Persistent Organic Pollutants (POPs) were incinerated in compliance with new legislation.
- We were also able to recycle 9,000 kg of Waste Electrical and Electronic Equipment (WEEE), including cabling, lighting, and screens.

| Resource Demand Reduction | | From Reuse | From Recycling | Total |
|---|---|---|---|---|
| Energy | *(KWh)* | 5,930,592 | 38,820 | 5,969,412 |
| Crude Reduction | *(55 gal. Barrels)* | 16,628 | 110 | 16,738 |
| Landfill Space Reduction | *(Cubic Meters)* | 57 | 94 | 151 |

# BAHRAIN NETWORK (BNET) B.S.C CLOSED

## BNET'S ENVIRONMENTAL INITIATIVES

### INTRODUCTION

The aim of BNET's Environmental Best Practices project is to showcase the organisation's commitment to environmental sustainability and highlight its achievements in energy conservation, renewable energy utilisation, waste management, and water conservation. Through this project, BNET aims to inspire both internal and external stakeholders to adopt similar practices and contribute to a greener, more sustainable future.

BNET has made significant progress in various environmental areas. The organisation has implemented energy-saving initiatives that have reduced its carbon footprint and improved energy efficiency. BNET has actively participated in global energy-saving initiatives, such as Earth Hour, and has promoted energy conservation within its community. The adoption of renewable energy sources, particularly solar energy, has allowed BNET to reduce its reliance on traditional energy sources and minimise carbon emissions.

Additionally, BNET has established a robust recycling initiative that has diverted significant amounts of waste from landfills, aiding in resource preservation and environmental pollution mitigation. The organisation's water conservation efforts have led to an impressive 71% reduction in water usage, achieved through innovative technologies and efficient water management practices.

BNET's accomplishments demonstrate its commitment to sustainable practices and set an example for others to follow, inspiring positive change within the telecommunications sector.

### IN DETAIL

**1. Energy Saving Initiatives**

BNET's commitment to environmental sustainability is demonstrated through its comprehensive energy-saving initiatives. Addressing inefficiencies head-on, BNET has implemented a multifaceted approach to minimise its carbon footprint and maximise energy efficiency. One of the cornerstone strategies is the pursuit of energy-saving solutions, such as deploying cutting-edge technology to identify and rectify leaks,

curbing wastage, and conserving resources. Additionally, the organisation has worked to reduce power consumption by upgrading equipment and optimising energy usage protocols.

BNET actively participated in the global energy-saving initiative, Earth Hour, by turning off all lights at its facilities for one hour. The event was highlighted on their public account, where employees were encouraged to join in by switching off lights at home. This initiative was aimed at inspiring the community to contribute to energy conservation and environmental protection.

Perhaps most notably, BNET has embraced renewable energy sources, achieving an impressive 61% solar energy production rate. This shift to solar energy has reduced reliance on traditional sources, significantly minimising carbon emissions. BNET's investment in renewable energy not only supports its environmental ethos but also demonstrates its commitment to driving positive change within the industry. This leadership in renewable energy positions BNET as a trailblazer in the transition to a greener, more sustainable future, setting a compelling example for other companies to follow.

In essence, BNET's energy-saving initiatives represent a paradigm shift in how organisations can operate sustainably. By combining proactive measures, technological innovation, and a commitment to environmental stewardship, BNET is reducing its ecological footprint and paving the way for a sustainable tomorrow.

**2. Recycling Initiative and Water Conservation**

BNET's dedication to environmental stewardship goes beyond energy conservation, encompassing waste management and water conservation. Through its robust recycling initiative, BNET has diverted substantial waste from landfills, helping preserve natural resources and mitigate environmental pollution. This effort reflects the organisation's commitment to responsible corporate citizenship and proactive solutions to the global waste crisis.

BNET's achievement of a 71% water conservation rate further underscores its commitment to sustainability. By leveraging innovative technologies and adopting best-in-class water management practices, BNET has minimised water usage across its operations. Efficient irrigation systems and water-saving fixtures optimise water efficiency, demonstrating the organisation's proactive efforts to safeguard natural resources.

Through its relentless pursuit of water conservation, BNET sets a benchmark for responsible resource management, fulfilling


its environmental responsibilities while strengthening its reputation as a leader in corporate sustainability. This commitment inspires others to follow suit in the journey toward a more sustainable future.

### 3. Lighting and Thermal Coating Innovations

In its pursuit of environmental excellence, BNET has embraced cutting-edge technologies to optimise energy efficiency. By implementing motion-sensing lighting systems that automatically adjust based on occupancy, BNET minimises energy waste and reduces operational costs. Additionally, the RLU protection project, which applies thermal coatings to reduce heat infiltration, decreases the need for air conditioning, further mitigating energy consumption. The ZALLAQ Exchange heat rejection paint Proof of Concept (POC) highlights BNET's commitment to exploring innovative energy-saving solutions.

### 4. Carbon Footprint Reduction

BNET places a strong emphasis on reducing its carbon footprint through a multifaceted approach that includes strategic initiatives and targeted investments. A key component of this strategy is the transition to environmentally friendly refrigerants in air conditioning systems, which reduces greenhouse gas emissions and aligns with global climate change mitigation efforts.

BNET's carbon footprint reduction initiatives also include the promotion of renewable energy and energy efficiency measures. Automated water pumps optimise water usage and reduce energy consumption in water management. Furthermore, the development of the HIDD solar plant demonstrates BNET's holistic approach to sustainability by harnessing renewable energy resources to power its operations. Integrating renewable energy generation with energy-saving initiatives, BNET is not only mitigating its carbon footprint but also fostering a more resilient and sustainable energy infrastructure.

# BARRATT LONDON

## WEMBLEY PARK -BUILDING UP SUSTAINABLY

### INTRODUCTION

Barratt Developments Plc, through its Barratt London division, is overseeing the construction of a prestigious residential project in Wembley, London, featuring five towering buildings ranging from 13 to 21 storeys. With a strong focus on sustainability and environmental responsibility, the project integrates green spaces, eco-friendly construction methods, and an unwavering commitment to reducing its environmental footprint. The project aims to implement best practices in waste management, energy use, and resource conservation, all while meeting the stringent challenges posed by the site's limited space and access.

### IN DETAIL

The development in Wembley is built with a clear aim to deliver both a visually impressive and environmentally responsible structure. The project includes the creation of a children's play area, 986 sqm of communal green space, 22 new trees, and a green roof garden. These efforts are part of a broader goal to promote sustainability while enhancing the quality of life for future residents.

The construction process uses Continuous Flight Auger (CFA) piles, an environmentally friendly building method that eliminates vibration and noise, creating minimal disruption to the surrounding environment. In addition, Hydrotreated Vegetable Oil (HFO) vehicles are used to reduce the carbon footprint of construction activities. These choices reflect the commitment to green building techniques that ensure the project's environmental impact remains as low as possible.

Given the site's restricted access, achieving sustainability goals required innovative solutions to minimise waste. The project leadership teams have been at the forefront of driving these sustainability practices, taking ownership and focusing daily on waste management strategies. The project has embraced the waste hierarchy, focusing

on reducing, reusing, recycling, and recovering materials.

To reduce waste, the site has implemented several initiatives, including pallet recycling schemes, paint tub take-back schemes with Dulux and Crown, and cable drum recycling programmes. These materials are returned to suppliers for repurposing or recycling, ensuring that the construction process generates as little waste as possible. Additionally, materials like wood over 600mm are stored in noggin boxes for reuse at different stages of the project. When doors are no longer required, they are redeployed to other sites.

The site also segregates a variety of materials to ensure their reuse, including plasterboard offcuts, wood, and cables, to minimise waste production. Waste segregation areas on each floor allow contractors and tradespeople to separate recyclable materials such as paper, cardboard, plastic, cans, PPE, batteries, vapes, plasterboard, metal, wood, and general construction waste.

Once waste is segregated, it is sent to a Material Recycling Facility (MRF), where residual materials are converted into Solid Recovered Fuel (SRF) or Refuse Derived Fuel (RDF). This ensures that all waste is either recycled or converted into a resource, aligning with the project's zero landfill objective. Skip covers are also utilised to protect recyclable materials from rain and damage, and the entire waste process is monitored through CCTV to ensure compliance with the waste management strategy.

Through these efforts, Barratt London is not only delivering a high-quality, sustainable development in Wembley but also setting a strong example of how the construction industry can embrace best practices in waste management and sustainability.

# THE BERKELEY HOTEL

## THE BERKELEY RECYCLING CHALLENGE

### INTRODUCTION

The aim of The Berkeley Hotel's recycling challenge was to dramatically enhance our environmental sustainability by significantly reducing the volume of general waste and boosting our recycling rate. At the start of the challenge in early 2023, our recycling rate stood at 36.9%. We set an ambitious target to elevate this figure by implementing comprehensive waste management strategies across all hotel operations.

Our primary objective was to establish a culture of recycling and waste reduction among our staff and guests. We introduced specialised recycling streams, including food waste, dry mixed recycling (DMR), textile collection, and more. By educating our chefs, kitchen porters, and other staff members, and involving all restaurants and outlets, we aimed to achieve seamless integration of sustainable practices in daily operations.

The recycling challenge sought not only to minimise our environmental footprint but also to inspire and lead the luxury hospitality industry in sustainable practices. By May 2023, we had already achieved a remarkable 54.2% recycling rate, and by May 2024, we reached an industry-leading 92.7%. This challenge underscored our commitment to sustainability, demonstrating that even in the heart of a bustling city, a luxury hotel can achieve exceptional environmental stewardship.

# Environmental Best Practice Volume 29


The Berkeley Hotel's recycling initiative has led to remarkable achievements, transforming our approach to sustainability and setting new benchmarks in the luxury hospitality industry. Our recycling rate soared from 36.9% at the beginning of 2023 to an impressive 92.7% by May 2024, one of the highest rates for a city-based luxury hotel, potentially nationwide and globally.

Key milestones include the introduction of comprehensive recycling streams—such as food waste, dry mixed recycling (DMR), textiles, and electronic waste—which significantly reduced our general waste. We also implemented an Environmental Sustainability Policy (ESP), received acceptance into the Westminster Sustainable City Charter, and engaged in continuous staff education to embed sustainable practices across all departments.

Our innovative practices have not only minimised waste but also contributed to energy generation from non-recyclable waste, reduced carbon emissions by producing ice in-house, and encouraged the use of sustainable materials like bamboo cutlery and paper packaging. These initiatives have positioned The Berkeley as a leader in eco-friendly luxury hospitality, demonstrating our commitment to environmental stewardship and setting a powerful example for the industry. Through these efforts, we have significantly reduced our environmental footprint while maintaining the highest standards of luxury and service.

## IN DETAIL

### What Did the Project Involve Doing?

The Berkeley Hotel embarked on an ambitious journey to redefine luxury hospitality through sustainability, with a focus on sustainable waste management. Our project encompassed a comprehensive overhaul of waste management practices, staff and vendor re-education, and policy development to embed eco-consciousness into every facet of our operations.

Key initiatives included:

1. Revolutionising Waste Management: We introduced specialised recycling streams including food waste, dry mixed recycling (DMR), textiles, electronic waste, and more. New bins were strategically placed, and robust collection and disposal procedures were meticulously established.
2. Engaging and Educating: Intensive training programmes for staff and informative campaigns for vendors ensured everyone at The Berkeley and beyond was part of and supported our sustainability mission. We empowered our team with knowledge and inspired our guests with our commitment.
3. Crafting Comprehensive Policies: We developed a 70-page Environmental Sustainability Policy (ESP), covering waste, energy, water, packaging, procurement, and biodiversity, laying down a long-term vision for our environmental efforts. This policy is still in its draft stages and under review, awaiting approval to be rolled across all facets of our operations.
4. Innovative Operational Changes: We banned single-use plastics across the F&B division, produced most ice in-house, and switched to sustainable materials like bamboo cutlery and paper packaging. Our approach was both holistic and innovative, aiming for zero waste to landfill. We implemented a touch-screen TV in our waste room for training purposes—one of the first "bin rooms" globally to have a TV screen. In the future, this will be able to track waste performance on a daily basis.

### Why did you do it?

Our drive was fuelled by a deep-seated commitment to environmental stewardship and a vision to set a new benchmark in sustainable luxury hospitality. Recognising the substantial environmental footprint

of hotels, we aspired to transform our operations to harmonise luxury with sustainability. Our goal was to lead by example, demonstrating that eco-consciousness can elevate the guest experience and inspire industry-wide change.

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

We were already spending on waste and recycling as a hotel through our partner Westminster Council (operated through Westminster commercial waste services and Veolia). That said, we have realised that our overall spend went down the more we recycled. It was almost a positive irony that the more we committed to recycling, the less it cost and the better it was for our bottom line.

**What did the project achieve in terms of sustainable development, economy, environment, and/or equity?**

Our project led to remarkable achievements:

1. Environmental Impact: Our recycling rate surged from 36.9% to an astounding 92.7%, significantly reducing landfill waste to 0% and lowering our carbon footprint. We now convert non-recyclable waste into energy, powering London homes through our partnership with Westminster.
2. Economic Savings: Through efficient waste management and energy use, we achieved annual cost savings estimated at £35,000 (minimum).
3. Social and Community Engagement: By aligning with the Westminster Sustainable City Charter and supporting local recycling initiatives, we strengthened community ties and promoted environmental awareness.
4. Enhanced Engagement: Staff engagement soared as they became active participants in our sustainability journey, fostering a culture of shared responsibility and pride.

**Who and what benefited?**

1. The Environment: Reduced waste and emissions contribute to a healthier planet, promoting biodiversity and lowering pollution levels.
2. Our Staff: Improved eco-consciousness through comprehensive training and engagement, leading to increased job satisfaction and a sense of purpose in contributing to global sustainability goals.
3. Vendors: Encouraged to adopt sustainable practices, resulting in a greener supply chain and fostering long-term partnerships based on shared environmental values.
4. The Berkeley Hotel: Realised significant cost savings, enhanced its standing in the community, strengthened its brand, and gained recognition as a leader in sustainable luxury hospitality.

**Longer term benefits?**

Our project lays a solid foundation for ongoing and future sustainability initiatives. Long-term benefits include:

1. Continued Waste Reduction: Further innovations in waste management.
2. Sustained Cost Savings: Ongoing reductions in disposal and utility costs.
3. Market Leadership: Continued leadership in sustainable luxury hospitality, attracting a growing segment of eco-conscious travellers.
4. Ongoing Environmental Stewardship: Continued positive impact on the environment, contributing to broader global sustainability goals.

**Was there anything innovative about the project?**

The true innovation of our project stems from the manner, types of waste, and implementation timelines we adopted. We achieved the fastest rate of recycling growth in Westminster, increasing our recycling rate from 36% to 92% in under 18 months. This groundbreaking accomplishment is particularly impressive for a luxury hotel of our size. If replicated across the industry, it could lead to a significant global decline in carbon emissions.

Our comprehensive approach to different waste types, from food and electronics to textiles and DMR, combined with a rapid implementation timeline, showcases a pioneering model for sustainability in luxury hospitality.

**Our project was a beacon of innovation:**

- Comprehensive Recycling Streams: Tailored recycling solutions for diverse waste types.
- In-House Solutions: Initiatives like in-house ice production and reusable bread baskets.
- Advanced Technology: Implementation of LED EFK machines and energy-efficient appliances.
- Holistic Policy Development: Our extensive Environmental Sustainability Policy guides all hotel operations.

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

Absolutely. The Berkeley's waste sustainability model is replicable across the hospitality industry and beyond. By adopting similar waste management strategies, comprehensive policy development, and robust staff engagement programmes, other organisations can achieve significant environmental and economic benefits.

| Waste Stream | Disposal Method | Quantity Collected | Weight (tonnes) | % |
|---|---|---|---|---|
| General Waste | Energy Recovery | 90 | 8.17 | 7.3 |
| Mixed Recycling | Recycling | 420 | 23.28 | 20.8 |
| Paper & Card | Recycling | 120 | 24.00 | 21.5 |
| Food | Recycling | 390 | 18.18 | 16.3 |
| Glass | Recycling | 780 | 32.76 | 29.3 |
| Coffee Cups | Recycling | 8 | 0.04 | 0.0 |
| Bulk | Recycling | 0 | 0.00 | 0.0 |
| WEEE Collections | Recycling | 0 | 0.00 | 0.0 |
| Textiles | Recycling | 88 | 5.28 | 4.7 |
| Garden | Recycling | 0 | 0.00 | 0.0 |
| | Total Weight (tonnes) | | 111.72 | |


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

We learned that engagement is key to success. Continuous education and clear communication with staff and vendors are crucial. Our future plans include:

1. Carbon Footprint Reduction: Implementing renewable energy sources and more energy-efficient technologies.
2. Supplier Sustainability Assessments: Ensuring our supply chain adheres to our high sustainability standards.
3. Continuous Innovation: Exploring new sustainable practices and technologies to maintain our leadership in sustainability.

**Relevant accreditation or awards gained?**

The Berkeley Hotel was honoured as a finalist for the 2024 Awards for Excellence in Recycling and Waste Management, recognising our waste management initiative in the retail, commercial, and public sectors for its innovation and dedication.

**Enforcement Actions**

No enforcement actions have ever been taken against The Berkeley Hotel. We maintain stringent compliance measures to ensure we meet all environmental regulations and standards, with regular audits and continuous improvements to prevent any violations.

# BLUEWATER SHOPPING CENTRE

## LEADING BEST ENVIRONMENTAL PRACTICE IN RETAIL

### INTRODUCTION

Bluewater is one of Europe's leading retail and leisure destinations, welcoming hundreds of thousands of guests every year. Since opening its doors on March 16, 1999, Bluewater has set the benchmark for the ultimate shopping and leisure experience. Located in Kent, our 240-acre site is surrounded by 50 acres of landscaped parkland and seven lakes. With 260 stores, over 50 bars, restaurants, and cafes, along with 13,000 free parking spaces spread over nine car parks, Bluewater attracts millions of visitors every year.

Sustainability is at the heart of Bluewater. Understanding its environmental impact and striving to be a truly sustainable destination is a core part of our operations.

Bluewater has a comprehensive sustainability programme encompassing energy and net zero, biodiversity, water and waste management, and social value. We have been driving down energy use and associated carbon emissions, implementing sustainable practices, and ensuring our waste is managed with minimal environmental impact. Additionally, we use our unique location in a former quarry to enhance the environment for wildlife. Over the last five years, Bluewater has reduced electricity use by just under 2 million kilowatt-hours, representing an 18.5% reduction. This is the equivalent of 5,714,000 tonnes of CO2 not being released into the atmosphere. This impressive reduction has been achieved through an extensive LED lighting replacement program, the use of passive ventilation to reduce the need for air handling units and reducing the running time of plant through the Building Management System (BMS). This represents an investment of over £3 million in energy-efficient technology.

The shopping centre's 240-acre estate is watered from a sustainable drainage lake system, saving 460 cubic meters of water every year. We have also

planted wildflower areas totalling 600 square meters to support biodiversity. We have diverted 10,000 tonnes of waste from landfill to energy-from-waste, easing pressure on the southeast and generating energy to power homes. Furthermore, we have donated £7,500 in gift cards to good causes and made just over £3 million in space donations to local charities, cementing Bluewater's reputation as a community supporter.

## IN DETAIL

Bluewater's energy efficiency journey began with the decision to turn off the Air Handling Units (AHUs) that supply cooling to the malls. To maintain guest comfort, we monitor the temperature and air quality, using passive vents to aid cooling and provide fresh air. None of the mall areas are heated, except for the food court and guest conveniences. Our air curtains are no longer heated and operate only on days when the outside temperature drops to prevent cold air ingress. We have received no guest complaints regarding temperature in the malls, even when the temperature reached 42 degrees in July 2022.

The shopping centre has recently completed a five-year programme to upgrade the car park deck lighting to LEDs with PIRs, resulting in a 60% reduction in energy use. Five miles of back-of-house corridors are now also equipped with LED PIR lighting. Bluewater has nine car parks and extensive back-of-house corridors, which were previously lit at all times. The back-of-house and car park areas have been upgraded from standard T8 fluorescent fittings to LEDs, replacing 2,500 light fittings. The malls are currently being upgraded, and stock room and lift lighting replacements are planned over the next two years.

Bluewater's extensive grounds are watered from our sustainable water management and drainage system, saving 460 cubic meters of water per year. We monitor the biodiversity of the water to maintain the quality and diversity of the environment. Situated on a brownfield site, we use the extensive parkland to enhance and support biodiversity. We have replaced 188 square meters of beds with pollinating plants and planted British native species to support overwintering insects.

Over the past five years, we have created 40 new log piles and three new bug houses as habitats for insects, reptiles, and amphibians. The bug houses were built in conjunction with the 15th Dartford Girl Guides, offering them an outdoor ecological learning experience.

More than 330 square meters of wildflower planting have been seeded in areas of low quality or bare

earth. Some of this planting was done in conjunction with the planting of cotoneaster Franchetii, a plant that absorbs 20% more air pollutants than other similarly sized shrubs.

Twelve staff members have been RSPCA-trained to respond to animal emergencies, such as illness or vehicle collisions. We also have five beehives and a trained beekeeper, which produce honey. This year, we successfully moved two swarms from the car park to the safety of the onsite hives.

An audit of the bee, bird, and bat boxes was conducted by the site ecologists, resulting in necessary repairs and replacements. A large nesting box was installed on the cliffs for the resident peregrine falcons, and a large bug house was added to the nature trail.

Certain areas of the site are left to grow over the summer months to provide essential cover for slow worms. When cutting of an area is necessary, it is supervised by an ecologist to minimise disturbance to the wildlife.

We are supporting a local healthy eating initiative in schools by organising visits for schoolchildren to the Bluewater Allotment School. Our onsite landscaping team teaches young people how to grow plants from seed, care for them, and harvest them. These classes are held every two weeks during the spring and summer.

Our landscaping team takes a minimal approach to pesticide use, applying them only between May and September, with robust plans to reduce this use to zero through the use of a hot foam system. From 2025, all landscaping equipment on-site will be electric, replacing the current non-renewable-powered equipment. All transport vehicles are electric.

Bluewater has been a zero-waste-to-landfill site since 2009. Using a color-coded bin system, we maintain a recycling rate of at least 75% annually, often achieving 80%. We regularly engage with our brand partners to ensure they are maximising the recycling routes we offer. Food waste is used to create biogas, which is injected into the grid for domestic use. Our general waste is sorted off-site to maximise resource use.

To reduce the impact of Bluewater's visitors on the local community, we've partnered with local bus companies to operate a Fasttrack service. This enables local people to visit Bluewater using electric buses, avoiding traffic congestion. We also have a cycle pathway, part of the National Cycle Network, along with cycle racks to encourage sustainable travel. The recently built residential estate will be connected to Bluewater via a tunnel, enabling easy pedestrian and cyclist access.

Bluewater has made over £3 million in space donations to local charities, including the Lennox Children's Cancer Trust, Abigail's Footsteps, and local MP surgeries. Gift card donations totaling £7,500 have been made to good causes over the past five years, and we will continue to be a significant contributor to the local community.

Looking ahead, future improvements at Bluewater include the installation of solar panels on the roof, the removal of compressed air as a power source for the smoke vents, the electrification of the gas AHUs to reduce reliance on non-renewable power, increasing biodiversity net gain by at least 15%, and achieving net zero by 2040.

# BUCKLES SOLICITORS LLP

## BUCKLES' WASTE MANAGEMENT SUSTAINABILITY PROJECT.

### INTRODUCTION

Buckles is a leading top 200 law firm that has grown significantly over the past decade, expanding from a workforce of 88 people across two locations in 2014 to a team of 200-250 people across seven locations in 2024. With this nationwide reach and the growing concerns about the environment, the firm has undertaken a project aimed at reducing the amount of waste sent to landfill through various waste reduction measures, recycling, and composting. This initiative focuses on raising awareness and providing education throughout the firm while also offering external support through a volunteering scheme.

By implementing and developing sustainable waste management practices, Buckles has also become more mindful in considering sustainable suppliers. As part of this effort, the firm has submitted an updated Environmental Policy to the Operations Board for approval, setting a clear target for achieving net zero, which will be available after this submission. Since 2014, Buckles has established clear goals and objectives to engage employees in its sustainability journey, achieving several milestones along the way. These include organising an external litter pick alongside other Peterborough-based businesses, clearing over 60 bags of rubbish in just two hours, and making environmental and resource management a top priority for staff, partners, and consultants.

The firm has also introduced a paper-lite initiative across departments, with a particular focus on the paper-heavy private client and litigation sectors. Additionally, efforts have been made to reduce general waste, encourage greener transport, and increase composting and recycling facilities across its seven offices. The Green Group has raised awareness among new employees, with the opportunity to participate during induction. The firm has made strides in updating its resources to be more sustainable, both electronically and physically, and has launched an electric vehicle salary sacrifice scheme to further its environmental commitment.

### IN DETAIL

With our expanding national presence and workforce size, along with the growing environmental concerns, we have launched a project focused on reducing the amount of waste sent to landfill. This project is centred around waste reduction measures, recycling, and composting. Achieving this goal requires promoting awareness and education across the firm, as well as providing external support through our volunteering scheme.

As we implement and develop sustainable waste management practices, we have also been encouraged to seek out sustainable suppliers. In light of these efforts, we have submitted an updated

# Environmental Best Practice
## Volume 29


Environmental Policy to the Operations Board for approval, which includes establishing our net zero target. This policy will be available following the board's approval.

Since 2014, we have set clear goals and objectives to engage employees in our sustainability journey, leading to the following accomplishments:

- Organising an external litter pick, where Buckles employees, alongside other Peterborough-based businesses, the community team, and Peterborough City Council, cleared over 60 bags of rubbish in just two hours.
- Making environmental and resource management a top priority for the firm's staff, partners, and consultants.
- Launching a "paper-lite" initiative across the firm, with particular focus on our paper-heavy private client and litigation departments.
- Reducing general waste, encouraging employees to use greener forms of transport, and increasing composting and recycling facilities across our seven offices.
- Raising awareness about the firm's internal Green Group during employee inductions, offering new employees the opportunity to participate.
- Updating the firm's resources, both electronically and physically, to be more sustainable and environmentally friendly.
- Introducing an electric vehicle salary sacrifice scheme.


This project began with an analysis of how the firm had achieved its sustainability goals previously, and what we envisioned the goals to be in the future. With waste reduction being at the forefront of our strategy, we implemented the removal of individual waste bins in our Peterborough office, which reinforced the use of the communal general waste and recycling bins. This has since seen a decrease in our contribution to landfill, with more produce being recycled than previously, and the need for less plastic bags. This has not only benefitted the environment, but also the firm, as it has reduced sedentary behaviour. In the long term, we envisage this decision to continue a lesser contribution by the firm to landfill and to help to make people more conscious about the different ways to dispose of products.

As part of our project, we considered how we can help the local community with waste reduction. In March 2024 a team of around 8 volunteers from the firm took part in Peterborough's Great British Spring Clean, working with other local volunteers managing to clear over 60 bags of waste in 2 hours. This helped to promote the firm's internal volunteering policy and boost wellbeing opportunities, whilst providing additional resource to other local volunteers. In the long-term already, we have seen that this has established contacts with the local community about contributing to the bigger sustainability picture, whilst providing a cleaner and safer community around us. This provided an opportunity internally to discuss sustainable activities we can participate/contribute to with litter picking being favourable.

Over the past year, we have also looked at our suppliers and if they match our sustainability goals in waste reduction. We therefore moved towards using Eat Fruit in most of our offices, who are near zero waste, and use eco-friendly/plastic free packaging with minimal fruit miles. This supplier has helped us reduce our carbon contribution compared to using bigger supermarket chains and promoted a reduction in food waste across our firm. We believe that this has been beneficial both internally and to the local community as this supplier seeks produce as local as possible. We have also become part of a podback recycling scheme with our coffee provider to dispose of our coffee pods in the most sustainable way. Therefore, as part of our wider waste management project we believed it was vital to not only consider what we are doing as a firm, but also the suppliers of the produce we consume.

In considering our food waste further within our project, we have placed compost bins within several of our offices. Whilst they are disposed of off site by the cleaners in two of our offices, one of our employees takes the compost from his office home to add to his personal compost heap. By implementing the use of these separate bins in our waste reduction project, we have diverted organic waste such as tea bags, and food scraps, from landfill. We believe that this has benefitted the environment and firm, due to the landfill burden reduction whilst encouraging our workforce to adopt more sustainable behaviours such as reducing food waste.

More recently, we have begun to provide educational pieces to the firm on sustainable behaviours. This has been incorporated via our internal internet page, where we have weekly posts on environmental subjects. We decided to initiate these posts following a successful flyer we created in December 2023 on 12 ways on how to have a sustainable Christmas. These posts not only raise awareness of why Buckles is fostering a culture of sustainability, but also provides more knowledge on the subject in an accessible way to a wider audience. We have found that these are turning into conversation pieces, with an encouragement to change habits. Simultaneously, this is promoting our internal Green Group and the projects they are a part of, that anyone in the firm is free to get involved with. This has also prompted a review of our Paper Lite scheme whereby though we have seen some anomalies in the 2023 data, a downward trend has occurred in both total print jobs and total pages printed. We have used this report to place reminder on our double-sided printing policy and promote

the systems the firm have adopted to develop more documents/data electronically where possible.

Whilst there have been no dramatic cost burdens to the firm to implement our project so far, there has been considerable time afforded to employees for participation. In the grand scheme of things, we believe that our project has not only benefitted the firm, but also local communities and visitors to our offices. Lately, we have donated our Nottingham office's equipment through Sustain which had a carbon saving of 5,814 kg/CO2e. Other quantifiable data can be found in the documents appended to this submission, but we draw particular attention to our print report and the information we obtained following our waste bin removal task which has achieved both sustainable development and contribution to the environment.

We believe that our project has been innovative in the sense that other firms/organisations can benefit greatly from adopting some of the measures we have taken in addressing existing problems in an effective way, and providing long-term costs savings with a positive social impact due to the wellbeing opportunities it has provided. We believe that our project has adopted a good framework for continuous improvement and has made a better use of our readily available resources.

This project has taught us that sometimes you need to look back at what you have previously achieved on a smaller scale, what improvements were made following this, and what steps are available now that we are both bigger in terms of locations and people. Moving forward, we look to establish a modern environmental policy which confirms our net zero target, and we are in the process of applying to become a registered B Corporation and using platforms such as Ecovardis to meet our ongoing sustainability goals.

# BUTTERMARKET CENTRE - CUSHMAN & WAKEFIELD

## BUTTERMARKET WASTE MANAGEMENT

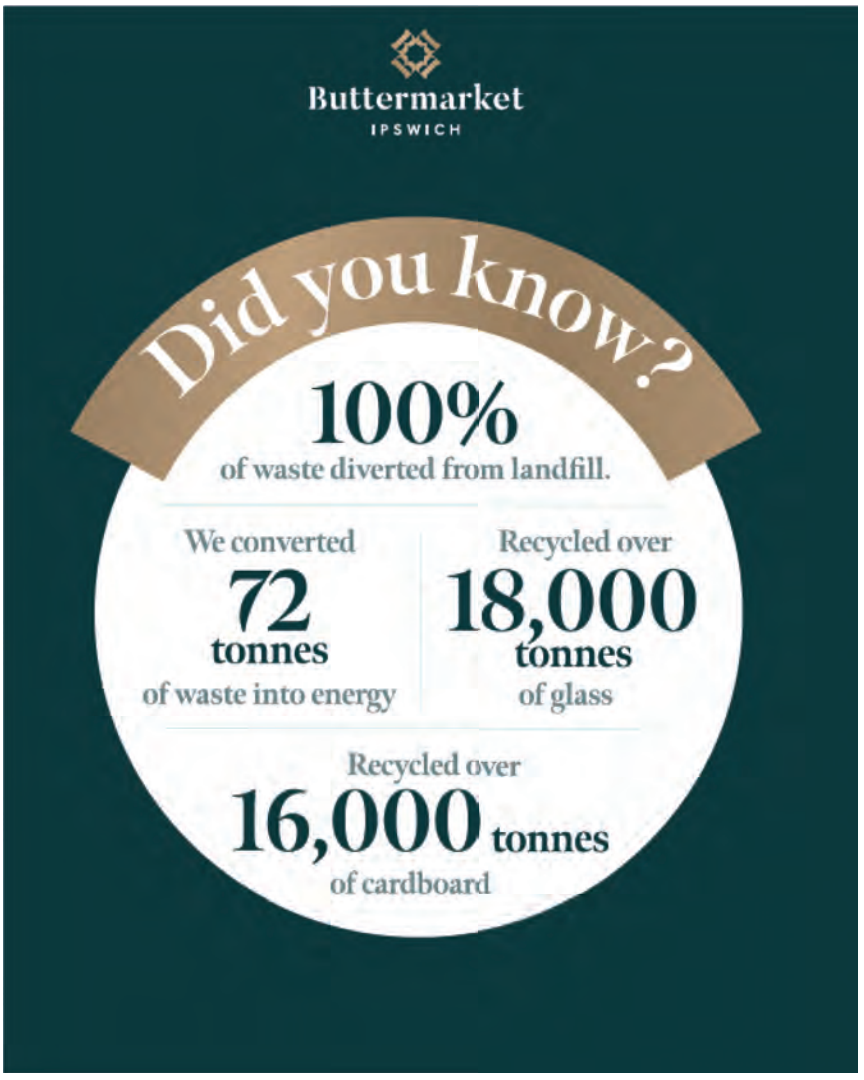
### INTRODUCTION

The Buttermarket developed a Waste Management Plan to create a system that meets tenant needs while contributing to the local area's economic and social development. This localised approach offers several benefits, including increased economic impact through local employment and contracting, a reduced carbon footprint from partnering with a nearby waste firm, lower tenant costs from fewer collections, and better on-site waste management with effective separation practices.

The Buttermarket Centre aimed to provide improved waste management services by minimising environmental impact, maximising economic benefit to the local area, reducing tenant costs, and implementing a coordinated on-site approach to waste separation.

The centre successfully achieved all four key objectives. Environmental impact was minimised by reducing the frequency of collections, saving 108.8 miles. Economic benefit was maximised by employing a local resident and awarding a £40,000 waste disposal contract to a nearby business. Tenant costs were reduced by £4,650, which was credited back to the tenants, representing a 23% reduction in service charges. Waste separation and management were coordinated on-site by providing each tenant with a controlled bulk rubbish area, ensuring minimal contamination, and arranging separate collections for non-general waste. A sectioned-off bin area was also created to clearly define each waste stream.


## IN DETAIL




As a retail and leisure hub committed to both tenant and community well-being, The Buttermarket prioritises sustainability by not relying solely on national operators and traditional methods. Instead, we focus on partnerships with local suppliers and service providers while challenging outdated processes. After reviewing waste reports and noticing higher-than-average tonnage and increased collection frequencies, the centre manager decided that a review of the site's waste management was necessary to ensure efficiency, cost-effectiveness, and proper waste separation.

Over several months, the services supervisor began monitoring waste disposal and quickly identified that several tenants were cross-contaminating waste streams and attempting to dispose of prohibited items through general waste. One tenant, for example, was using their general waste bin for food, glass, clothing, broken equipment, and furnishings. Immediate action was required to improve waste management, but the solution also had to be cost-effective, given the already strained service charge budget. Therefore, we developed a Waste Management Plan for the site.

The plan was divided into two sections. The first part outlined the four key areas we aimed to improve, with clear objectives and targets for delivery. The second part described how the site would manage and dispose of waste, highlighting the benefits of these improvements. As we were on a rolling waste contract, we worked with procurement to find a more local partner. We wanted to reduce our carbon footprint by ensuring waste wasn't being transported outside the county for processing and disposal. We successfully appointed a local service partner who was closer to the centre and could offer various waste disposal and reporting options, which were also more cost-effective due to their proximity.

Regarding waste management, we consulted with tenants to determine the most efficient and effective ways of managing waste. We first tackled bulk waste by assigning each tenant a protected, caged area where larger (non-general) bulk waste could be stored. We then arranged bulk clearance services to prevent such waste from ending up in the general waste, while also keeping costs down and ensuring proper disposal. The cost was minimal as the metal

for the cages was sourced from a store clearing out reusable materials. Additionally, since we have an on-site maintenance operative, we were able to use them to create and install the areas.

Next, we allocated each tenant a designated and lined area at the back of their store, providing labelled bins for each waste stream, whether for cardboard, general waste, or food. These bins were then checked before disposal. The bins were supplied at no cost as we were able to source surplus bins from our waste provider. Following the designation of tenant waste areas, we reorganised the bin storage in the main service area, marking the bins for food, glass, and other waste types. This organisation prevented contamination with general waste streams.

To manage waste in the service area, we decided to assign a dedicated team member to oversee waste management on-site. Given that a general cleaner vacancy was already advertised, we reworked the cleaning rotas and recruited a new member for the services team. Since an additional position had already been budgeted, no extra costs were incurred beyond the agreed service charge.

With these measures in place, the site was able to more effectively monitor the need for specific collections. By working with our waste provider, who now provided regular weight data for each waste stream, it became clear that as waste management improved, the need for scheduled collections decreased. With the new procedures in place, the site's waste management system was operating efficiently, resulting in fewer collections and lower overall costs, all contributing to the achievement of our goals and targets.

Two key learnings emerged from this project. First, the importance of partnership became evident. Having the right service partner on board, who understood our challenges and needs, was critical. This partner was also able to provide support and ideas to help us achieve our goals. Second, challenging the status quo was essential. Just because a process has always been done a certain way doesn't mean it should continue that way. By questioning established practices, better solutions and improved working methods can be found.

The Buttermarket has now established better processes and partnerships, and we are confident that, moving forward, we will continue to work together to challenge each other and deliver newer and more effective services and processes.

# CHEVRON GREEN SERVICES

## REPLANTING THE A14

### INTRODUCTION


Chevron Green Services was appointed by National Highways and Ringway Infrastructure Services to review the previous landscaping, which had not performed as expected. The task was to identify opportunities for improvement and to implement the National Highways' revised replanting strategy along a 21.5-mile section of the A14 in Cambridgeshire. The original establishment of trees was highlighted as part of the A14 Cambridge to Huntingdon Improvement Scheme Development Consent Order (DCO) and was a key focus for important stakeholders involved in the scheme. National Highways had previously identified 'No Net Loss of Biodiversity' as part of their strategy in RIS1 (2015-2020), meaning the success of trees and species-rich grassland sites would be critical to achieving that target for this project.

The overall purpose of this effort was to mitigate the environmental impact of constructing a new road section between Cambridge and Huntingdon. This work was also aligned with National Highways' key performance indicators (KPIs). The main objective during the recovery stage was to ensure that the project met its original corporate social responsibility targets and adhered to the planning conditions outlined in the DCO. Chevron Green Services' approach prioritised putting nature first wherever feasible, especially when collaborating with environmentally proactive clients like National Highways and Ringway Infrastructure Services.

There were numerous sustainable and community benefits to the project, with the most notable being the use of certified biodegradable tree shelters. It takes a brave client to prioritise nature and sustainability over budgetary concerns, and National Highways demonstrated that commitment. While the initial works faced some negative media attention due to concerns over the perceived number of failed plants, the replanting efforts did not attract similar criticism. This was largely due to National Highways' effective communication with key community stakeholders, keeping them informed and engaged with progress, ensuring their satisfaction with the actions being taken.

Sustainability and environmental care were the driving factors behind all decisions made during


the project's planning stages. Considerations such as soil samples, tree species, locality, impact on the community, and materials were all factored into the planning. The first phase of the revised planting strategy was completed in mid-March 2024. Although the full results of the project will not be evident until later in the year and beyond, by June 2024, early signs of plant establishment were already visible, with evidence of the replacement plants starting to leaf out across the project.

## IN DETAIL

The project began by assessing the road verges between Huntingdon and Cambridge on the A14, analysing the reasons why the previous tree planting had not thrived. Once this survey was complete, we removed the dead trees and plastic tree shelters, replanting 165,000 trees. The plastic shelters were replaced with certified biodegradable tree shelters. The Rainbow Terra certified biodegradable tree shelters used are made from 100% recycled materials, with the wood fibers used to create the shelters being Grown in Britain certified, meaning they originated in the UK.

The use of certified biodegradable tree shelters had never been employed on such a large scale by National Highways or any other large-scale project. These shelters biodegrade naturally in situ after the trees no longer require them for growth. This reduces the number of maintenance interventions needed. With fewer site visits, we were able to enhance worker safety, reducing issues like slips, trips, and falls. We also made a significant reduction in the overall carbon footprint of the scheme, while reducing the visual impact of plastic shelters, which had been identified as a negative aspect of the original large-scale tree planting by both the public and local government stakeholders.

Safety for our staff and supply chain is our top priority; we ensure that everyone goes home safe and well at the end of each day. Throughout the design phase of the project, we identified several health and safety improvements. We worked closely with National Highways to identify areas where tree planting required traffic management for maintenance. These areas were excluded from replanting, with replacement trees installed in other parts of the scheme. We also reduced the time operations teams spent on the network by using biodegradable tree shelters, and we identified areas accessible from access tracks with minor modifications to fencing.

During the initial planning phase, soil samples were taken from 20 locations across the scheme. The analysis confirmed that the soil was of low fertility and needed enhancement for replacement planting. Given the right preparation and aftercare, there was no reason why the trees wouldn't thrive. We recommended using soil enhancement and fertiliser prior to planting, as well as additional topsoil. Chevron Green Services proposed TerraCottem, a soil conditioner that contains nutritive, growth-stimulating, and water-absorbing components. These components work in synergy to stimulate root development and plant growth, even in poor and degraded soils like those along the A14.


For further success, we recommended cell-grown trees to improve the strike rate compared to bare-rooted trees, although this impacted the project's costs. When selecting tree species for optimal success, we identified species that would establish more effectively as cell-grown plants. Following our survey, we confirmed the number of trees to be replanted and met with a local nursery situated just 12 miles from the site. We discussed our needs, including species, tree types (cell-grown), and delivery timelines. The tree order was placed in May 2023, ahead of the planting season, giving the nursery enough time to procure the trees and grow them in a dedicated holding area for the project.

By using a local nursery, CGS was able to implement "just in time" deliveries, with trees being delivered to the site every other day, as the nursery staff commuted along the same route. This reduced the amount of time the trees spent out of the ground, increasing the chances of their successful establishment. Given the potential for negative media attention, we met regularly with the National Highways project team to provide progress updates. This allowed our client to keep key stakeholders, such as the project director, local authority landscape officers, and the National Highways press office, informed. We also contributed positive news about the project by sharing updates that explained the process of undertaking surveys, maintenance work, and tree planting.

At every stage of the project, sustainability was the key driver. Chevron Green Services sought the support of the Tubex recycling scheme, ensuring that the old plastic tree shelters removed from the site would be recycled into new shelters for resale through wholesalers. By using certified biodegradable tree shelters and not having to revisit the site to remove them, we calculated a carbon reduction of 737 kg $CO_2e$, which is equivalent to 1,200 road miles, reducing wear and tear on the roads due to fewer journeys. Additionally, by sourcing the tree shelters locally and using natural materials, we saved 10,000 liters of crude oil compared to the production of plastic tree shelters.

The National Highways Project Manager for the A14 was so impressed with the use of certified biodegradable tree shelters that they promoted their use for another major project in the same county, which will involve planting similar numbers of trees. The lessons learned from this project have also contributed to changes in recommendations published in the National Highways Series 3000 report. CGS is planning to use certified biodegradable tree shelters on future projects wherever possible. The safety, sustainability, and quality of these products far outweigh any potential cost. We have already recommended the use of Rainbow Terra shelters for schemes taking place over winter 2024/25.

Overall, we are delighted with the sustainable approach taken and the support received from our clients and partners throughout this project. Chevron Green Services' mission is to create, conserve, and care for biodiverse habitats for generations to come, and we believe that our work replanting the A14 is a true reflection of this commitment. No enforcement actions have been taken against Chevron Green Services.

# COGNITION LAND AND WATER

## THE BARKING POWER STATION GAS PIPELINE DECOMMISSIONING PROJECT

### INTRODUCTION

On 28th October 2014, Barking Power Station permanently ceased operation. Following its depressurisation and purging of gas in March 2015, the gas supply pipeline was charged with nitrogen to a pressure of 2 bar to keep the pipeline "live." The project was initiated to fully decommission the pipeline and ensure its safety in compliance with the Health and Safety Executive (HSE) guideline, A Guide to the Pipeline Safety Regulations 1996 – Guidance on Regulations. To ensure the pipeline remained safe after discharging the nitrogen charge, a permanent and maintenance-free solution for its decommissioning was needed. The proposed solution involved grouting the entire pipeline and removing Above Ground Installations (AGIs).

As part of the project, Cognition Land and Water proposed using a low-carbon grout for the infill material, which resulted in a substantial reduction in embedded carbon. By incorporating secondary byproducts, the alternative material reduced carbon emissions in comparison to the original works information. This change in material composition led to a 71% reduction in embedded carbon, saving 3,219 tonnes of CO2 equivalent (CO2e). Additionally, the change in delivery method cut vehicle movements by 60%, saving another 34 tonnes of CO2e.

Throughout the project, Cognition engaged in negotiations with 36 separate landowners and 3 local authorities, helping ensure that the work was completed on time. The methodology employed by Cognition accommodated sensitive, seasonal constraints and demonstrated care and respect for property and operations, fostering strong and trusting relationships with landowners. As a result, the project successfully met the requirements for abandonment under the Pipeline Safety Regulations 1996, effectively removing a legacy risk for the affected landowners.


### IN DETAIL

Cognition Land and Water Limited and City of London Corporation completed the Barking Power Limited (BPL) Gas Pipeline Decommissioning project during 2023. The project decommissioned the BPL 24-inch diameter gas pipeline running from Horndon-on-the-Hill, Essex to Barking, London, in compliance with requirements for abandonment under Pipeline Safety Regulations 1996. The former Barking Power Station, closed in 2014, is being prepared as the new site of the combined

London Markets (Spitalfields, Smithfield and Billingsgate). Cognition was appointed as Principal Contractor and Principal Designer for these Works under the CDM 2015 regulations.

A requirement of the contract was for Cognition to identify how the proposed materials and methodology will reduce carbon emissions over the lifetime of this contract. Through adopting the use of low carbon materials where possible, but still satisfying the required technical performance requirements, we minimised energy use, adopted circular economy principles, carried out sustainable procurement practices and much more. The Tender Performance Specification by Arup proposed a Lightweight Cellular (foamed) Concrete. In partnership with our supply partner, DeConstruct Group, Cognition developed an alternative grout mix design made up of CEM I cement, GGBS cement replacement, and Bentonite. This introduced significant benefits through using sustainably sourced industrial byproducts. The change in mix design reduced the carbon footprint, whilst maintaining the required strength and workability properties. Also, the change in material composition reduced embedded carbon by 71%, saving 3,219t CO2e, across the total volume of 6,420m3 of grout that was required to fill the pipeline.

The Baseline Specification required deliveries of ready-mix concrete within 8m3 HGV trucks for foaming and pumping on site. Cognition's alternative grout mix option could be made in tanker deliveries of up to 20m3, giving a much-reduced frequency of vehicle movements. We used a site-based grout batching plant, reducing haulage distance when compared to an offsite ready-mix facility. The change in delivery method reduced vehicle movements by 60%, saving a further 34t CO2e.

Cognition negotiated access agreements with 36 separate landowners and 3 local authorities along the 19.1km route including Ford, Tesco, Network Rail, HS1 and several farmers. In addition to the alternative grouting materials used, the methodology presented by Cognition for accessing the work areas resulted in significantly less disturbance to both land and operations. Existing accesses were prioritised, and new haul roads kept as short as possible. Detailed negotiations with each landowner ensured sensitive areas were avoided and seasonal constraints, such as crops, harvesting and seeding, were factored into our programme. All temporary haul roads were formed using temporary, reusable track-mats, manufactured from recycled materials that were easily transportable between phases. This approach resulted in no lasting environmental damage or disturbance.

Mr Stuart Mee of Manor Farm, North Ockendon commented: "it's has been a pleasure working with Cognition as they infilled the old gas pipe across our land. They have respected our farming operations and our land and kept us well informed".

The many specification, operational and design features brought to the project by Cognition have

The success of this project has laid the foundation for further contracts between the City of London and Cognition and has provided further evidence of the high standards of innovation and collaboration that Cognition brings to complex projects. The Grout Mix design and batching plant was later used on a second contract to decommission the former cooling water tunnels into the River Thames undertaken through late 2023 and 2024.

resulted in, we feel, a flagship of sustainability in the construction industry. They have resulted in a greatly reduced carbon footprint, far fewer vehicle emissions, increased use of industry byproducts and reinforcement of the goals of a circular economy. The project was the first between the City of London and Cognition, but its success has laid the foundation for further contracts. The work has satisfied the requirements for abandonment under Pipeline Safety Regulations 1996, which was the primary aim of the project. Also, the works satisfied the requirement to use low carbon materials and support, meeting the City of London Climate Action targets.

The project was completed with no safety or environmental incidents and an AFR = 0. The client representative commented: “Cognition are a reliable contractor with a pragmatic, collaborative ‘can do’ attitude to project delivery. They have demonstrated a clear understanding of the challenges experienced and have worked to overcome these in the most efficient way. The projects they have delivered are complex and large scale and have been delivered on time and budget despite all risks and variables. Their input on this project has been invaluable in achieving the clients objectives.” Ian Bates, Director - Major Projects & Cost Consultancy, Lambert Smith Hampton.

# CPL/PURAGEN ACTIVATED CARBONS

## PFAS 'FOREVER CHEMICALS' - "SEARCH, CAPTURE & DESTROY"

### INTRODUCTION


#### Aim of Project

PFAS (per-and poly fluoroalkyl substances) is a chemical family consisting of at least 5,000 individual compounds. They are sometimes referred to as 'forever' chemicals because of their persistence in the environment. These compounds, which are now known to pose serious health risks for humans and animals, have been widely used in industry since the 1950s, for products including non-stick cookware, firefighting foams, food packaging and fabric coatings. PFAS-group 'Forever' Chemicals are now the number one environmental concern for many industrial sectors, notably water utilities. The aim of our "Search, Capture & Destroy" project, developed in-house by our technical team, was to be able to offer a state-of-the-art abatement technology that includes the removal of PFAS from water using optimised granular activated carbons (GAC), followed complete destruction of the PFAS molecules via advanced thermal reactivation techniques. It is the only PFAS-removal technology that is truly sustainable, since the GAC reactivated via our process can be reused for water treatment and other purification applications. The key issue was to prove that the PFAS molecules have been completely destroyed in our process, since many in our sector believed that this would not be possible.

#### Project Achievements

CPL/Puragen Activated Carbons has been recycling spent activated carbons for over 10 years and has a great deal of experience in the use of thermal reactivation techniques to remove and destroy contaminants and allow the activated carbon to be reused by customers, a process that offers a carbon footprint saving in excess of 90% compared with the use and subsequent disposal of virgin carbon media.

After extensive research and development work by our UK technical team, we have perfected the processing conditions required to completely remove and destroy these harmful PFAS chemicals, a process we refer to as "Search, Capture & Destroy". Independent testing by third party experts has confirmed that the gas- and liquid-phase emissions of PFAS from our process are at, or below, background levels.

In addition to our advanced thermal reactivation process, we have also developed a range of new granular activated carbon (GAC) materials that remove PFAS from the water more efficiently in the first place, compared with standard GAC products currently used in the water treatment industry. This new family of products is called our FiltraCarb® CH range.

## IN DETAIL

The treatment of water - including drinking water, process water and wastewater - with granular activated carbon (GAC) is a long-established technique for the removal of a wide range of contaminants and has proven to be the best available technique for the abatement of these PFAS-group chemicals. But for many years, the key outstanding question was 'what happens to the PFAS molecules once they have been removed from the treated water?' i.e. is the problem simply being transferred from one place (the water) to another (the spent activated carbon). Indeed, there was a common misconception, even from industry experts, that PFAS molecules could not be destroyed via 'normal' treatment processes.

CPL/Puragen Activated Carbons has been recycling spent activated carbons for over 10 years and has a great deal of experience in the use of thermal reactivation techniques to remove and destroy contaminants and allow the activated carbon to be reused by customers. The reactivation of spent carbon, rather than the use and subsequent disposal of 'virgin' carbon media, offers a huge environmental footprint reduction – in the case of our specially designed and optimised rotary kilns, the 'carbon footprint' saving is in excess of 90%, a major contributing factor in our being awarded a Green Apple Award for Environmental Best Practice in 2023.

After extensive R&D and technical work by our UK team, we have perfected the processing conditions required to completely remove and destroy these harmful PFAS-group chemicals, a process we refer to as "Search, Capture & Destroy".

One of the key challenges relating to this project was how to communicate this important innovative breakthrough to a sometimes-sceptical audience. The key aim of the communication campaign was to spread the word as widely as possible to relevant audiences. We updated brochures (EN, FR, NL) to emphasise our PFAS-busting technology and circulated them extensively at various conferences and exhibitions. We made technical/commercial presentations to specific industry groups, both virtually (for example to the Institute of Chemical

Engineers, IChemE, a video of which is available on our YouTube channel), and in person thanks or our presence at the following events:

- The Environmental Services and Solutions Expo (ESS), 2023 and 2024 editions;
- The British Water Micropollutants conference;
- The WWT Drinking Water Quality conference, 2023 and 2024;
- The 17th Conference of the UK Water Network at Cranfield University;
- Pollutec 2023 in France;
- The 2024 Annual Conference of the British Society of Soil Science.

We have also advertised in relevant trade media (for example the Institute of Water magazine) and made extensive use of digital and social media, particularly LinkedIn, where we have a strong following within various industrial sectors.

Another key part of the communication strategy linked to our innovation was convincing people we could indeed do what we are claiming, without divulging sensitive process information that competitors would find useful. The use of third-party emissions monitoring data, proving the PFAS emissions from our destruction process were effectively at background levels, or even below detectable limits, allowed us to demonstrate the validity of our claims.

Overall, we believe this is a game-changing breakthrough, giving water companies and other industrial sectors a powerful tool in their demanding fight to address the issue of PFAS 'forever chemicals' in the environment. As governments and water regulators move towards greater restrictions on PFAS levels in drinking water, as well as reduced environmental PFAS emissions, we will be in a strong position to assist affected companies with their treatment challenges. We are currently running trials with a number of UK water companies, the results of which look very promising and could result in us winning significant new business in this competitive sector.

# CROWN WORKSPACE LTD

## PUTTING THE CIRCULAR ECONOMY AT THE HEART OF THE WORKPLACE WITH CROWN CIRCULATE

### INTRODUCTION

At Crown Workspace, we aim to provide workplace services that are low carbon, embrace the circular economy, and use natural resources responsibly, while meeting clients' business needs. We achieve this through Crown Circulate, which places the circular economy at the heart of the workplace, enabling a continual loop of reuse for workplace assets. This approach also allows us to create fulfilling jobs in the green economy. Moreover, by meeting wider community needs as an integral part of our service, we and our clients can generate social value through our everyday business.

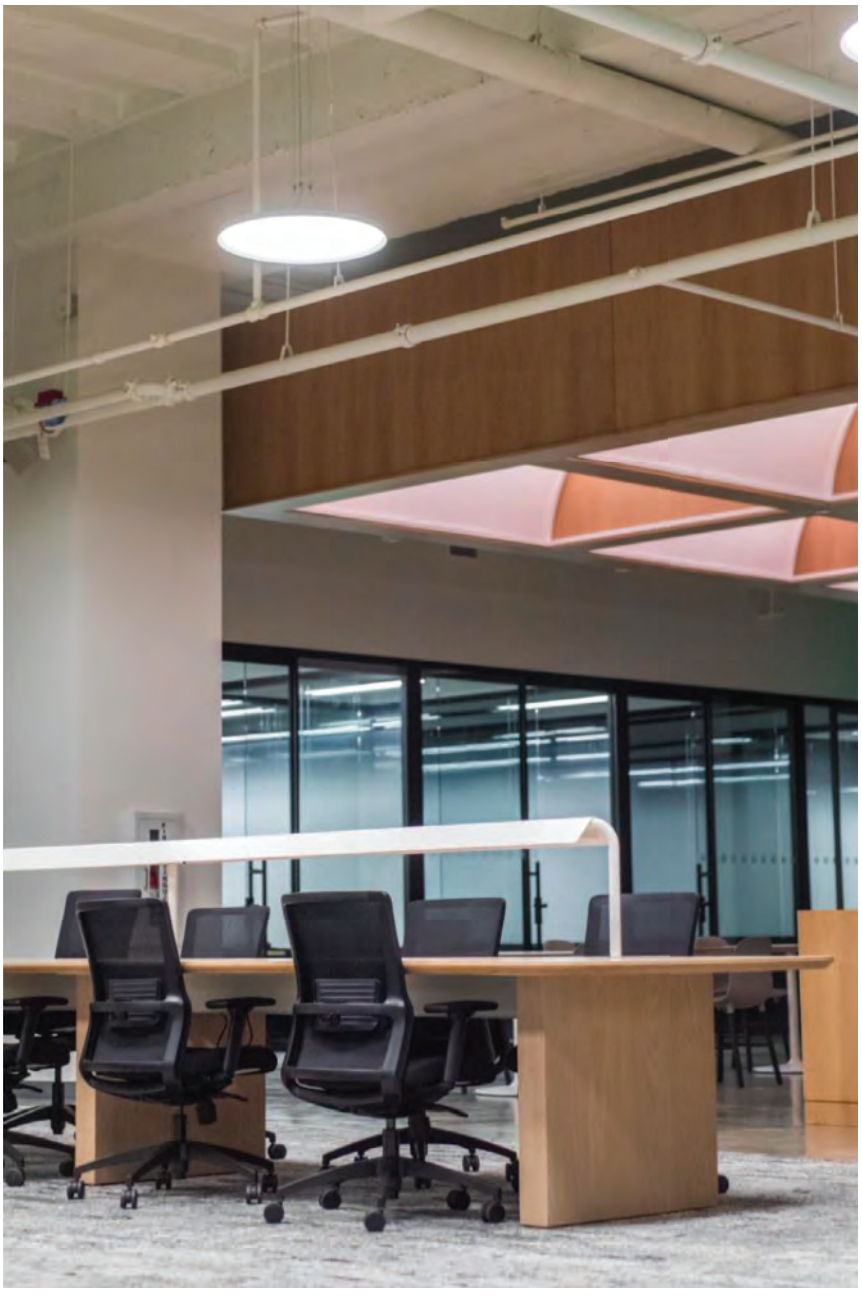
While we have been providing sustainable solutions for office furniture and IT equipment for more than a decade, Crown Circulate is helping us transform our entire business step-by-step. Over the last six months, we have defined six guiding principles that enable us to assess and extend the lifecycle of assets at every stage of workplace change. By following these principles, we are innovating across our business, investing in and evolving our market-leading facilities and capabilities to deliver comprehensive circular services. These services help our clients embrace the circular economy and create environmental, social, and economic benefits, whether they are moving, changing, or maintaining their workplaces.

Circulate provides a roadmap for putting the circular economy at the heart of the workplace, guiding how we deliver for our clients now and how we develop our business in the future. It offers those working in the built environment the services they need to support their organisations' net-zero and social value targets. By widely sharing our expertise, Circulate also provides others with a better understanding of how to put circular economy principles into practice.

Since 2015, we have:

- Remanufactured and refurbished 116,000 items of furniture in our Renew Centre, saving 6,600 tonnes CO2(e).

- Reconditioned 133,000 items of IT equipment through Renew IT, saving 9,800 tonnes CO2(e) and diverting 950 tonnes into reuse.
- Enabled the donation of 39,000 items of furniture, IT, and other equipment through the Giving Back Project, saving 1,400 tonnes of CO2(e) and generating £1.9 million in social value.



When hundreds of tonnes of office furniture are sent to landfill every day, and the furniture and laptops for as few as 100 office-based workers can represent 30 tonnes CO2(e), Circulate enables our clients to be part of the solution rather than the problem. Our sustainability efforts have been recognised this year with an EcoVadis gold rating.

## IN DETAIL

Having offered sustainable workplace services for over a decade, we have seen the market change significantly. The climate crisis and social inequality are now front of clients' minds. Our business focus has moved from managing waste in line with the waste hierarchy to keeping products and materials in the circular economy as we continue to meet clients' evolving needs.

Over the last twelve years, we have learnt by experience, listened to our clients, and transformed our business centred on value creation not just for clients but for our communities and the environment. We have developed new sustainable services, expanded our facilities and capabilities, and seen demand for these grow exponentially. To better reflect this focus, the progress in the market, and our ability to embed circularity into business as usual, we have recently launched Crown Circulate and its six guiding principles.

We audit and map clients' assets to enable reuse, reduce wastage and make financial savings through asset management focused on longevity. In 2024, we invested an initial £10,000 in implementing


our asset lifecycle tool, LENS, enabling us to help clients take a maximum lifecycle approach to the embodied carbon of workplace assets, manage resources more effectively, and make reuse central to decision-making in workplace change projects and business as usual. We are currently rolling out a new set of processes for circular clearances, training employees to strengthen their carbon knowledge and to most effectively use this new technology.

We help clients make the most of existing assets and prolong their life by preparing them for reuse internally or by others. Our market-leading London-based facilities enable us to restore furniture, IT, and AV equipment and extend their lifecycle. We remanufactured and refurbished 20,000 items of furniture in our Renew Centre in 2023, saving 873 tonnes CO2(e). We were appointed Authorised Refurbishment Partner for Herman Miller in 2021 and since then have obtained similar status with other top manufacturers. We opened a satellite Renew Centre in Wolverhampton in 2021 and are now advising Crown's Singapore office on how to set up a facility there. We securely wipe data-bearing devices and recondition thousands of items of IT equipment each year at Renew IT. In 2023, we reconditioned 34,000 items, 20% up on what we had achieved in 2022. This saved 2,900 tonnes CO2(e) and diverted 350 tonnes into reuse.

We make it simple for clients to buy quality used furniture and IT equipment through our online channel, Office Resale. Selling between £3 to 4 million of used assets each year, Office Resale enables us to buy and sell on clients' redundant assets, to allow them to realise the value in these and for others to benefit. We upgraded this website in 2023 to improve the customer experience and are now investing in improving search engine optimisation to bring quality used assets to an even wider audience.

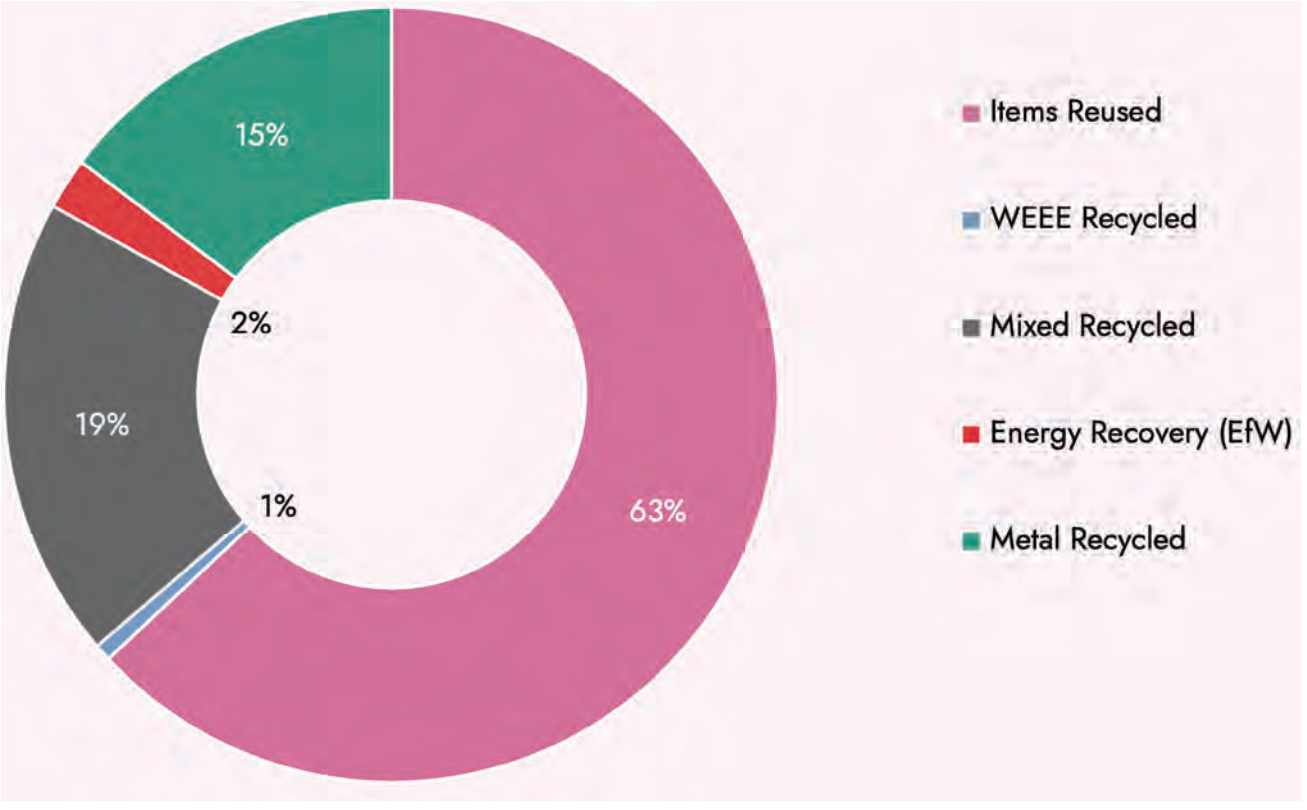
We make it simple for clients to redistribute redundant assets across their estate for reuse by colleagues. Having audited and mapped clients' assets, and repaired and refurbished these where needed, we can relocate and reinstate them and provide temporary storage, so they are available when needed. Alternatively, we can take these items off clients' hands and enable their reuse by those in need across our communities through our donation initiative, the Giving Back Project. We employed an additional sustainability coordinator in 2022 who has improved the operational efficiency of the scheme and helped us double our network in the last two years. The Giving Back Project has over 650 charity, school and social enterprise partners and we are now working to further expand our network regionally to help clients generate social value in their localities. The scheme enabled the donation of 5,800 items of furniture, IT and other equipment in 2024, saving 220 tonnes of CO2(e).

As with any genuine circular economy solution, Circulate is dedicated to preventing waste in the first place. But where waste is generated, we work to keep these materials out of landfill and in the circular economy. We continually innovate in the Renew Centre and since 2022 have developed a range of low carbon furniture made from desk off-cuts. We have invested in innovative partnerships to deliver closed loop solutions for waste materials. In 2023, we entered a partnership to enable waste wood to go to manufacturer Egger to make chipboard panels which we buy back for remanufacturing into new desks and worktops. In 2023/4, we have piloted schemes with LMB Recycling and Yodomo who take and enable reuse of our fabric offcuts. We have also invested significant time and resources to establish and vet recycling partners across the UK to enable 100% recovery on client projects wherever feasible.

We provide comprehensive evidence of project savings from reuse, resale and rebates, donations and the charities supported, and carbon savings achieved by using our services. We deliver client savings reports for both project and business as usual, demonstrating transparency and supporting clients' decision-making and sustainability reporting. We have evolved these reports in 2024 to better reflect Circulate services and clients' reporting requirements.

# Environmental Best Practice
## Volume 29


A market leader, we set best practice and seek to share our knowledge and encourage others to follow our lead. We speak at many webinars and hold regular open days at our Renew Centre. We have already shown the circular economy in action to over 60 clients and other visitors this year. We are continuing innovating and evolving our services and capabilities to retain our market leading position and support our clients in sustainably managing workplace assets through growth and change.



# DARK SKY ASSOCIATION

## DARK SKY ALQUEVA: A MISSION TO PROTECT THE NIGHT SKY

### INTRODUCTION

Dark Sky® is not just a brand but a powerful concept where sustainability plays a crucial role, guided by a clear mission, vision, objectives, and milestones—standing in contrast to a broader, vague notion of sustainability that embraces everything and nothing. When Dark Sky® was created, it was founded on a long-term vision of 50 years. Along the way, we have refined, adapted, and improved, but without losing sight of this important long-term goal.

The first destination in Portugal dedicated to astrotourism, Dark Sky® Alqueva, was born in 2007, thanks to the efforts of Apolónia Rodrigues, a pioneer in developing astrotourism destinations in Portugal. With a specialisation in sustainable tourism and future trends in tourism, the creation of the Dark Sky® concept and brand was the best way to develop and implement diverse skills within a destination while contributing to a better future.

### IN DETAIL

Certified in 2011, Dark Sky® Alqueva is the first Starlight Tourism Destination in the world and the first cross-border Starlight Destination globally. It spans 10,200 square kilometres around Alqueva Lake, encompassing both Portuguese and Spanish council areas. With its sky quality certified, Dark Sky® Alqueva offers a wide range of daytime and night-time activities.

Within this certified area, Dark Sky® Alqueva established The Official Dark Sky® Observatory in Cumeada, a village near Reguengos de Monsaraz, which holds the Best Tourism Village seal awarded by UN Tourism. The Observatory is equipped with

advanced telescopes for solar and astronomical observations, staffed by a certified team to welcome stargazers. It provides a unique visual experience, allowing visitors to observe planets, explore moon craters, and embark on a cosmic journey to witness nebulae, galaxies, and star clusters in one of the clearest skies in the world. The expansive Alqueva region also offers a variety of activities that complement the sky-gazing experience, such as relaxing at sunset with a cocktail or enjoying a blind wine-tasting by starlight. Outdoors, surrounded by nature, visitors can walk, take moonlit horseback excursions, or participate in astrophotography workshops, whether they are beginners or experienced enthusiasts.

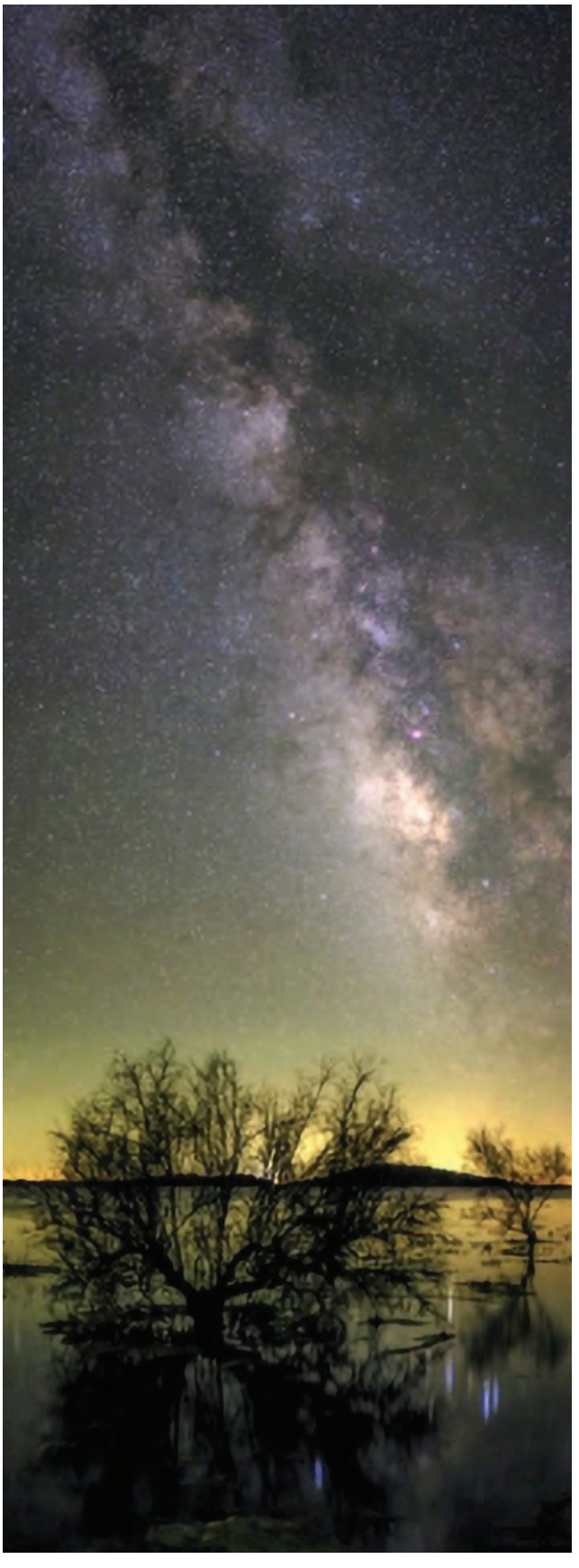
Miguel Claro, the official astrophotographer of Dark Sky®, is dedicated to capturing and sharing the beauty of the night sky, which is set above breathtaking landscapes that highlight the cultural and architectural heritage of the Alqueva region. His work connects the Night Sky to the Earth's elements, educating people about the universe, which often goes unnoticed due to the light pollution of modern cities. These images have the power to inspire and rekindle a lost passion for reconnecting with the starry darkness above, like the one found in Dark Sky® Alqueva.

In addition to these activities, Dark Sky® Alqueva has an Official Network of Partners specialising in different fields, offering tailored packages of activities to meet each client's needs and create unforgettable experiences from sunrise to the star-filled night in the Alentejo. These include night-time canoeing, boat or hot-air balloon excursions over Alqueva, stand-up paddleboarding, team-building events, orientation challenges, yoga, sports activities, and much more. The official Dark Sky® Alqueva partners can only be found on the website (www.darkskyalqueva.com), and they are the exclusive providers using the Dark Sky® brand.

# Environmental Best Practice
Volume 29

Due to the success of Dark Sky® Alqueva as a concept, brand, and its contribution to sustainable development, the Dark Sky® Association began receiving requests from other regions in Portugal in 2017. Potential integration requires a prior study to assess the sky quality, availability of cloudless nights, tourism offerings, and interest in reducing light pollution. This led to the creation of Dark Sky® Portugal to develop sustainable destinations under the Dark Sky® brand.

The primary mission of Dark Sky® is to protect the night sky as a valuable resource for sustainable destination development and, above all, to raise awareness of the growing issue of light pollution. The goal is to preserve the night sky in a sensitive and respectful way, recognising it as a cherished heritage of humanity.



# ENCORE ENVIRONMENT

## PROJECT DIVERT

### INTRODUCTION


Project DIVERT's aim is to make decision makers in the construction industry think differently about waste and challenge the traditional routes of waste disposal. Project DIVERT provides closed loop opportunities for construction companies, identifying materials from sites that can be reused back into the circular economy. Identified items are then diverted free of charge to local organisations in need, charities, hospices, social enterprises, community groups, and schools. This is achieved through its unique database of 1600 beneficiaries across the UK, based on location and need.

It also ensures all waste that can be recycled, such as metal and glass, is diverted to recycling and reprocessing facilities at the point of removal. It is integrated into our custom coded waste broker software, which means across each Project DIVERT job, we can conduct a life-cycle analysis of materials and calculate the cost and carbon savings of waste disposal routes, enabling transparency and complete traceability. Project DIVERT can reduce waste costs, reduce carbon, create environmental improvements by reducing the tonnage going to landfill or other waste disposal services, and importantly, create a huge amount of social value by providing items to organisations in need that transform lives.

Project DIVERT has diverted over 100 tonnes of construction waste away from traditional waste disposal routes to organisations in need. If forecasted and planned: 100% end destination, 100% reuse, and a 100% recycle rate depending on where the waste/resource has been sent to.

Project DIVERT has achieved 190K carbon savings for clients and saves the construction client 36% (on average) on waste costs.

Project Divert's VCSE database holds over 1600 contacts and is growing fast with a 30% increase. 105 beneficiaries saved an estimated £60,000 in donated items they didn't need to purchase! Donated items are contributing to the renovation and development of community infrastructure projects reflecting positive change. The collaborative efforts between businesses and VCSEs are addressing social needs and maximising the 'Positive Impact' of construction waste donation.

By measuring the carbon emissions avoided by diverting waste from traditional routes of waste disposal and keeping it in circulation, Project DIVERT demonstrates the positive environmental effects achieved. Project DIVERT has created new jobs and a dedicated Level 4 Software Development Apprenticeship Scheme. It has impacted staff through new opportunities to volunteer at PD beneficiaries and has won industry and local awards for innovation and positive impact.

## IN DETAIL

Referred to as disruptors and innovators within the construction waste sector, Encore Environment has challenged the conventional routes of waste disposal and has proven to reduce waste, waste costs, and save carbon through its unique environmental and social value innovation: Project DIVERT.

As a waste management supplier to the construction industry, Encore's services are routinely procured on a price/commercial-driven approach and rarely on value. Targets are set on delivering savings, and the day-to-day reality (especially in a downturn) is dominated by cost savings. Construction procurement departments often have little choice but to procure waste services on a price-driven basis. Furthermore, when it comes to construction waste, there are no set goals to effect positive behavioral change, encourage responsibility, or capture data to gain insight and therefore develop areas of improvement. However, there is now an increasing focus on environmental credentials and a definite shift in decision-making processes to consider ESG as well as cost and service. Senior decision-makers are now crying out for a value-driven approach to waste management.

To understand where environmental improvements could be made, Encore recognised that in the waste hierarchy, the last line of defense before landfill is to recycle and recover waste. However, this course of action still requires resources, has cost implications, and consumes energy. The idea for Project DIVERT came from Encore's automated 'Preconstruction Environmental Audit,' which identifies waste items that can be reused. Encore has really encouraged a mindset change to actively reduce the amount of waste from site in the first place. Project DIVERT comes higher in the waste hierarchy and is a better environmental solution than ordering mixed skips and using traditional waste disposal routes. Importantly, this shifts the focus from recycling to 'waste prevention.'

To deliver this effectively, Encore knew project leaders and design teams within construction contractors working on refurbishments and fit-outs needed to be engaged early in

the process, providing them with the environmental data to understand what the environmental impact would be based on their decisions. This is why Project DIVERT is so innovative; it is an early environmental intervention that facilitates the reuse of existing surplus materials, including furniture, floor finishes, and ceiling tiles, and connects them to local organisations such as schools, libraries, charities, and refuges. It also ensures the segregation of clean excess construction material such as plasterboard and floor coverings that can be bought locally by others or transferred to other live construction sites. Any items that can be recycled and reprocessed, such as glass, metal, and timber, are segmented, and the end destination is transparent!

This is all documented with Duty of Care, end destination transparency, and environmental metrics around the project, including tonnage saved from landfill and a carbon measure. An impact report is generated for clients, including all environmental data, which also supports Encore's B Corp commitments. Because there is less waste, there are fewer skips, which lowers the client's waste costs and also reduces emissions from transporting waste. It aligns perfectly with the UN's Sustainable Development Goal 12, Responsible Consumption and Production: To encourage companies to adopt sustainable practices and integrate sustainability information into their reporting cycle.

Project DIVERT is unique. While some companies use the concept of waste diversion, it is on a commercial basis. Project DIVERT is integrated into Encore's bespoke waste broker software, so clients have access to it as part of their total waste management strategies. While initially it was used as a standalone platform, it has been coded into Encore's Blue Box system to meet the increased demand from the construction industry, streamline resources, and combine reporting on traditional routes of waste disposal together with the results of Project DIVERT, which details cost-saving data and, importantly, the carbon savings to the client.

Blue Box is used for all order processing, site waste management plans, BREEAM reporting, resource efficiency management plans, pre-construction and environmental audits, and BREEAM refurbishment audits. So, having Project DIVERT combined within the software is a huge benefit to Encore's operations team, its clients, and beneficiaries. It also makes it scalable. It has already created jobs, including a Level 4 Software Apprenticeship, and has robust growth opportunities into more sectors. For example, Project DIVERT was implemented to redistribute 300 gallons of surplus hand sanitiser from a media company to 22 community groups stretching from Watford to Northampton. This shows the innovation is not limited to construction waste diversion but can facilitate the reuse of items across many sectors, which Encore is exploring.

Encore has continually developed the PD initiative over a number of years with internal investment of approximately £40K, including research and development in technology, investment in people resources, and, as mentioned, an Apprenticeship

scheme for coding and app development working in partnership with Milton Keynes College Institute of Technology, supporting new talent. Funding has been provided through organic growth, although as this is a bespoke technology, Encore has been able to recoup some of this through research and development tax relief.

The quantitative evidence of impact listed in the project achievements highlights Project DIVERT's key performance, focusing on its environmental impact, including the estimated 100 tonnes of waste saved from landfill and 190,000 carbon savings for clients. Something that is harder to quantify is the hugely positive impact it has on Encore's staff, its clients, and the beneficiaries receiving the donations, which, through feedback from beneficiaries, has truly transformed lives. It is these human stories Encore captures in its Project DIVERT case studies to showcase how an environmental choice can impact people so much. It has provided homeless people with beds, a young family living with bare floors in winter with new carpet tiles, and studio equipment to a children's charity, for example.

The Encore team feels very empowered, and senior staff have been heavily involved with personal visits to the charities to make sure it has all run smoothly. Project DIVERT has helped to create a culture of support, motivation, innovation, friendship, and inspiration.

# PROGRESSIVE WASTE MANAGEMENT **FOR PLANET AND PEOPLE**










We are a waste management and environmental consultancy that challenges the traditional routes of construction waste disposal by providing alternative ways to reduce waste, reduce carbon and create environmental and social value. We pride ourselves on being disruptive, entrepreneurial and innovative, implementing early-stage sustainable interventions that encourage a change in behaviours towards waste.

Our award-winning environmental and social value initiatives Project DIVERT and Waste Wise Kids deliver proactive strategies for industry and education. Using intelligient reporting and technology, we reduce and reuse waste, reduce costs, decrease carbon and create positive impacts in the community. We also promote sustainability education in schools through our environmental education programme.

We are B Corp Certified and a Social Enterprise with values that prioritise people and planet by using circular economy principles and business as a force for good.

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# THE FLOORBRITE GROUP LTD

## SUPPORTING THE TIP GROUP IN MANAGING SPECIALISED WASTE STREAMS

### INTRODUCTION

The Floorbrite Group are proud to have been supporting The TIP Group since January 2017, and over the past 7 years, we have implemented numerous waste management initiatives in line with their sustainability goals. As The TIP Group has expanded its operations across the UK, our portfolio has increased from 11 sites in 2017 to 33 sites as of the start of 2024. Each site is audited individually to assess its requirements. However, after working closely with TIP's EHS Manager and their Sourcing Manager, we were tasked with providing solutions for the below waste streams across the whole portfolio.

- To provide a solution for truck trailer curtain waste
- To provide a solution for all hazardous workshop waste
- To provide a cleaning solution for truck parts to remove oil, grease and other contaminants and dispose of the waste produced in a sustainable way.

Previously, all trailer curtain and workshop waste were being disposed of as general waste, which was causing a lot of overweight and contamination charges. Parts washers were located on only a few sites, meaning there were many sites without access to the adequate machinery. Over the past few years, Floorbrite have implemented recycling solutions across all TIP sites for their trailer curtains, workshop waste, and have installed parts washers across all necessary sites.

Since January 2023, we have recycled 115 trailer curtains, equating to approximately 8 tonnes of waste, which we have successfully diverted from landfill. Further to this, 17 tonnes of workshop waste, including spent aerosols, used grease cartridges, mixed filters, oily rags, empty paint tins, and waste oil, has been collected and disposed of as waste to energy.

Finally, since the start of the TIP contract in 2017, we have installed 15 parts washers across various sites, 5 of which have been installed in the past year. With this machinery in place, in the past year we have ensured that 257 litres of oil waste have been successfully diverted from landfill and processed for future use.

## IN DETAIL

### Trailer Curtains

Floorbrite engaged The TIP Group to address the disposal challenges associated with their trailer curtains. These trailer curtains were previously being disposed of as general waste and sent to landfill by their previous waste provider. With these curtains weighing approximately 70kg each, they were also receiving a high volume of overweight charges. We implemented a new scheme for the disposal of the curtains so that 100% of the waste is diverted from landfill and is instead reused and recycled, minimising their environmental impact as well as creating savings by eliminating overweight charges caused by the curtains. Our partner collects them from sites across the UK, and they undergo a process to prepare them for recycling and reuse.

When the curtains arrive at our partner's workshop, their new life starts: the curtain is spread out on a 50ft long table, and the buckles and rollers are removed from the top and bottom. These are then recycled, reducing waste and environmental footprint. The damaged and non-usable material is then cut off from the edges. All the webbing and internal pockets are stripped/removed, and any eyelets or damage to the curtain are cut out. Each curtain is cut into 8 ft pieces, folded, and stacked on euro pallets for the next stage.

High-grade curtains with no damage are sent to Switzerland to be made into designer bags. Curtains that do not fit these standards and have areas of damage or defect are sent to Africa to provide shelters for farmland or used in humanitarian projects as roofing material for temporary housing. This method of disposal has supported The TIP Group in achieving zero to landfill as well as reducing costs. Further to this, this is a free service, and all rebates for the trailer curtains are saved throughout the year and donated to a charity of TIP's choice in support of their CSR initiatives. In 2023, £1200 was saved from rebates and donated to TIP's annual Charity Bike Ride in May 2024. This project is a brilliant example of how other transportation and logistics companies can benefit not only financially but also in supporting their ESG goals by recycling trailer curtains.


**Workshop Waste**

The implementation of workshop waste bins across all TIP Group sites marks a significant step towards enhancing sustainability and environmental responsibility. As standard, we have installed receptacles for the following: aerosols, grease cartridges, filters, oily rags, paint tins, and waste oil. By centralising waste collection and disposal processes, Floorbrite aimed to streamline operations while adhering to stringent environmental regulations.

The project was executed with careful consideration of both environmental impact and financial sustainability. One of the most significant achievements of the project was its substantial contribution to waste diversion efforts. In the past year, the project successfully diverted 17 tonnes of workshop waste from landfill sites. Instead of contributing to environmental degradation, this waste was redirected towards a more sustainable path, undergoing waste-to-energy conversion and recycling some materials to support a circular economy model.

Beyond the immediate environmental benefits, the project also delivered tangible financial advantages to the TIP Group. By avoiding costly landfill fees and eliminating overweight charges associated with improper waste disposal, the initiative generated substantial cost savings. Furthermore, by aligning with TIP Group's sustainability and CSR goals, the project reinforced the organisation's commitment to responsible business practices.

The innovative aspect of this project lies in the comprehensive and systematic approach to managing diverse types of workshop waste. The project also introduced an integrated waste management solution that can be replicated across other sites and industries. Other organisations in the transportation and logistics industry, as well as those with similar workshop operations, can benefit from implementing our methods. By adopting specialised waste bins and focusing on waste-to-energy conversion, they can achieve significant environmental and economic benefits.

**Parts Washers**

Floorbrite undertook the installation of parts washers across TIP Group's sites to address the challenge of cleaning truck parts and managing waste oil and contaminants sustainably. The project involved deploying self-contained parts washers equipped with a micro-refinery system capable of cleaning the solvent used, minimising waste and reducing the need for frequent solvent replacement. This innovative approach was implemented to streamline operations, reduce environmental impact, and support TIP's sustainability goals.

The initiative was driven by the necessity to improve waste management practices, reduce landfill contributions, and eliminate high charges incurred from previous methods of disposal of waste oil and contaminants. Financially, the project was supported through the savings generated from reduced landfill fees and the cost-efficiency of the parts washers' self-cleaning capabilities. The investment in these machines was offset by the long-term economic benefits, including significant cost savings on solvent replacement and maintenance.

The project achieved remarkable outcomes. Over the past year, the TIP Group has successfully diverted 257 litres of oil waste from landfill, ensuring it was processed for future use. This not only supported sustainable development by reducing environmental pollution but also contributed to a circular economy by recycling used oil into new lubricants. The TIP Group benefitted from reduced operational costs and compliance with environmental regulations, enhancing their commitment to responsible business practices.

The long-term benefits of this project include ongoing cost savings, reduced environmental impact, and the promotion of sustainable practices within the transportation and logistics industry. The innovative aspect of the parts washers lies in their

closed-loop oil recycling system, which significantly reduces waste and CO2 emissions compared to traditional methods. Floorbrite's approach to waste management serves as a model for other industries with similar needs.

**Future Plans**

Looking ahead, Floorbrite remains committed to furthering innovation in waste management practices. Building on the success of this project, we aim to explore additional opportunities for waste recycling and recovery. By expanding waste management solutions to cover additional waste streams and continuously seeking ways to minimise environmental impact, Floorbrite endeavours to uphold its position as a leader in sustainable facility management solutions. We plan to support our clients' sustainability objectives through these initiatives, continuously striving to minimise environmental impact and enhance waste management practices.

# FLOURISH AND SHINE INITIATIVE

## FLOURISH AND SHINE INITIATIVE

### INTRODUCTION

Flourish and Shine Initiative addresses marginalised urban communities, often affected by poverty, inadequate infrastructure, and limited access to green spaces and clean resources. These are typically low-income families, minority groups, and residents of underfunded neighborhoods where environmental neglect is prevalent.

The initiative also engages volunteers passionate about community service, environmental sustainability, and urban development, including local residents, activists, and professionals like contractors and environmental engineers. These individuals are driven by a desire to create positive change, enhance community welfare, and promote eco-friendly practices. Together, they work towards transforming neglected areas into thriving, sustainable communities, improving quality of life and fostering a sense of collective responsibility and empowerment.

Flourish and Shine Initiative has achieved remarkable milestones in its unwavering pursuit of creating beautiful, sustainable, and resilient communities worldwide. Through the tireless efforts of our dedicated volunteers and skilled contractors, we have transformed countless neglected spaces into thriving gardens and renovated structures that serve as beacons of hope and pride.

Our innovative approach to sustainability, incorporating groundbreaking technologies such as solar harvesting asphalt and ingenious water purification systems, has set new standards for environmental stewardship and inspired communities to embrace eco-friendly practices. As we have expanded our reach into developing countries, we have forged strong partnerships with local organisations, empowering them to take ownership of their environments and drive lasting change from within.

Our capacity-building programmes and training initiatives have equipped hundreds of individuals with the skills and knowledge necessary to become agents of transformation in their own communities. The impact of our work is evident in the renewed sense of purpose, improved quality of life, and enhanced social cohesion that permeate the communities we serve.


Flourish and Shine Initiative's achievements stand as a testament to the power of collective action and the boundless potential for positive change when passion, expertise, and resources are united in the pursuit of a common goal.

## IN DETAIL

How can we beautify and promote long-term sustainability in marginalised communities through volunteer-led gardens, contractor-led renovations, and eco-friendly infrastructure improvements? Flourish and Shine Initiative tackles the problem of neglected and underserved urban and rural areas, where lack of green spaces and poor infrastructure contribute to environmental degradation and reduced quality of life. Nearly 80% of marginalised communities face significant disparities in access to clean water, renewable energy, and sustainable living conditions (EPA, 2022). These areas often suffer from higher pollution levels, inadequate housing, and limited community engagement. By implementing volunteer-led gardens, contractor-led renovations, and eco-friendly technologies like solar tiles and water purification systems, the initiative aims to create healthier, more sustainable environments. This not only beautifies these neighborhoods but also fosters community pride and resilience, addressing both immediate needs and long-term sustainability goals.

Flourish and Shine Initiative addresses marginalised communities, often affected by poverty, inadequate infrastructure, and limited access to green spaces and clean resources. These are typically low-income families, minority groups, and residents of underfunded neighborhoods where environmental neglect is prevalent. The initiative also engages volunteers passionate about community service, environmental sustainability, and urban development, including local residents, activists, and professionals like contractors and environmental engineers. These individuals are driven by a desire to create positive change, enhance community welfare, and promote eco-friendly practices. Together, we work towards transforming neglected areas into thriving, sustainable communities, improving

quality of life and fostering a sense of collective responsibility and empowerment.

The initiative targets both local marginalised urban and rural communities, addressing areas with significant environmental neglect and poor infrastructure. In the U.S. alone, over 30 million people live in areas lacking access to clean water and green spaces (EPA, 2022). The initiative aims to transform these communities through sustainable practices, volunteer-led gardens, and eco-friendly renovations. The long-term goal is to expand into developing countries, where over 1 billion people face similar challenges (World Bank, 2021). By enhancing local and global communities' beautification and sustainability, the initiative seeks to create healthier environments, improve quality of life, and foster global environmental consciousness. This scalable impact can lead to widespread adoption of sustainable practices, benefiting millions worldwide.

Flourish and Shine Initiative envisions a world where every marginalised community thrives in harmony with nature, embracing sustainability and beauty. Our mission is to create vibrant, self-sustaining neighborhoods through volunteer-led gardens, eco-friendly renovations, and innovative technologies like solar harvesting asphalt and ingenious water purification systems. We aim to foster a global movement of environmental stewardship and community empowerment, transforming neglected areas into flourishing hubs of green living and resilience. By harnessing local engagement and scalable solutions, we aspire to bridge the gap between underfunded communities and the rest of the world, ultimately contributing to a healthier, more equitable planet. Our vision is to inspire collective action, proving that even the most underserved areas can flourish and shine with the right support and dedication.

The project offers cutting-edge solutions to beautify marginalised areas and promote sustainability. Key features include volunteer-led community gardens, contractor-led renovations, and modernisation of dilapidated homes and buildings, all while preserving cultural relevance. These innovative technologies and sustainable practices aim to transform neglected, marginalised neighborhoods into vibrant, sustainable communities, fostering environmental consciousness and resilience. Flourish and Shine Initiative stands out by integrating community-driven efforts with cutting-edge sustainability technologies, unlike traditional programmes that often focus on one aspect. Our unique approach combines volunteer-led gardens and eco-friendly renovations with innovative solutions like solar harvesting asphalt, advanced

water purification systems, and culturally sensitive infrastructure improvements. This holistic model ensures not only immediate beautification but also long-term environmental and social sustainability. Additionally, our emphasis on preserving cultural relevance during renovations sets us apart, fostering community pride and ownership. By empowering local residents and leveraging modern technology, we create resilient, self-sustaining communities, bridging gaps that other initiatives often overlook.

Flourish and Shine Initiative ensures long-term sustainability through a multi-faceted strategy focusing on community engagement, strategic partnerships, and continuous innovation. By training local residents in eco-friendly practices and involving them in volunteer-led projects, we foster ownership and ongoing maintenance. Strategic partnerships with businesses, government entities including the US Chamber of Commerce, and NGOs provide financial support, resources, and expertise, ensuring robust backing for our initiatives. Additionally, we prioritise scalable, cost-effective technologies like solar harvesting asphalt and water purification systems to maximise impact with minimal environmental footprint. Regular monitoring and evaluation allow us to adapt and improve our projects, ensuring they remain effective and relevant. This comprehensive approach guarantees the longevity and continued success of our mission to beautify and sustain marginalised communities.

The success relies not only on financial support but also on the invaluable contributions of our dedicated volunteers, partners, and advocates. We sought passionate individuals with diverse skills, from gardening enthusiasts to construction professionals, who are willing to donate their time and expertise to our projects. Collaborations with local organisations, community leaders, and government entities are crucial in facilitating access to resources, navigating regulations, and fostering community engagement. We partner with educational institutions and research centres to stay at the forefront of sustainable technologies and best practices. Media partners and influencers amplify our message, raising awareness about our mission and inspiring others to join our cause. Policymakers and thought leaders champion our initiatives, drive systemic change, and create an enabling environment for our work. Together, this non-financial support empowers Flourish and Shine Initiative to deliver lasting solutions and complete its transformative projects.

Flourish and shine inititaive is more than just a non-profit organisation: it is a catalyst for change, a beacon of hope, and a testament to the power of collective action. Our unwavering commitment to creating beautiful, sustainable, and resilient communities is rooted in the belief that every individual deserves to live in an environment that nurtures their well-being and inspires their dreams. The Flourish and Shine Initiative will create a world where beauty, sustainability, and opportunity flourish in every corner, leaving a lasting legacy of positive change for generations to come.

# FROG ENVIRONMENTAL

## UK'S FIRST SUSTAINABLE 'RAIN READY' WATER TREATMENT SYSTEM FOR ENVIRONMENTAL PROTECTION

### INTRODUCTION

Surface water runoff is becoming increasingly common on construction sites due to unprecedented weather patterns. The UK has faced 11 months of above-average rainfall, and 2023 was the wettest winter since records began. Construction companies are battling year-round wet weather, which brings an elevated risk of pollution to local watercourses caused by the mobilisation of soils on site. Traditionally, there have been limited ways for companies to manage surface water, using synthetic silt fences or tank-based pumped systems to remove silt from surface water before discharging it to watercourses.

Frog Environmental set out to bring long-term, sustainable, and simple low-maintenance solutions that close the loop on the circular economy for the UK construction industry. They have introduced new benchmarks that achieve exceptional water quality standards using sustainable products to mitigate silt pollution and protect precious water resources—the first mobile water treatment system of its kind in the UK.

Winvic, a Tier 1 contractor undertaking £3m - £200m+ projects, was the first company to adopt this new approach. Since their collaboration in 2017, Frog Environmental has worked with Winvic on over 100 sites, bringing demonstrable change to industry practices across the UK. The collaborative approach has established a new platform for testing, compliance, and validation. Winvic engages Frog Environmental early on every site, and together they've developed training programmes and new environmental standards to ensure compliance with freshwater regulations, consistently performing and monitoring practices.

Achievements include:

- Water quality standards being consistently met in line with permits.
- Going above and beyond standards, removing pollutants such as heavy metals (up to 99%) and Phosphorus (by 82%) from the water.
- Introducing new, sustainable silt binding materials such as Floc Mat™, which hadn't been used in the UK before.
- Adopting a circular economy approach. Not only is the collaboration achieving high water quality standards and low-carbon engineered designs, but materials can also be reused on new construction schemes or left to provide habitats.

- 90% of Winvic's sites have implemented gravity treatment systems and attenuation ponds (each system saves over £23,500 on fuel and around 10 tonnes of CO2).
- New tools were developed for monitoring, such as 18-point correlation curves, to give site staff confidence with in-situ measurements and the knowledge to act against performance benchmarks.
- Silt control training modules have been created as part of Winvic's induction process.

## IN DETAIL

Frog Environmental is proud to be challenging traditional methods of silt management and innovating new ways to bring sustainable, simple, and low-maintenance solutions to support the construction industry and, more importantly, protect the wider environment through decreased silt pollution incidents. Projects have involved the use of field testing and establishing training programmes to aid staff learning in treating silty water before it is discharged and finds its way to local watercourses. If silt isn't removed from the water, it will pollute waterways and harm aquatic life. Polluting is a prosecutable offence, and with UK river health reports stating that only 12% are in favourable condition, precious water resources need protecting.

The primary motivation behind the project was to address poor quality surface water management arising from construction industry activities, including the need for developing sustainable, low carbon, low maintenance systems and training on environmental risks and effective monitoring to achieve exceptional performance across all sites.

The innovative methods over the past 7 years have led to tried and tested systems that have made a substantial contribution to reforming the industry. Not only have water quality improvements been made that also protect aquatic ecosystems, but the adoption of biodegradable circular economy processes and the reduce, reuse, recycle model has contributed to less waste and habitat improvements on site.

"Our partnership has provided a positive impact through the upskilling and knowledge sharing of issues in relation to silt to our site teams. Frog Environmental knows how to capture our teams' attention and provide simple but effective solutions. Thank you for the positive impact you have on us and ensuring we are Doing it Right." – Senior Environmental Manager, Winvic

### Achievements

Frog Environmental's 'Rain Ready' water treatment system cleans water on-site for as little as 0.03p – 0.05p per $m^3$ of water, which is much lower than other options such as hiring pumped tanks. Project costs have been significantly reduced with these innovative designs and sustainable materials. For

every gravity-fed system install, it is estimated that over £23,500 is saved per annum on fuel and hire costs, and around 10 tonnes of CO2 compared with a pumped system. Over 90% of Winvic sites utilised the carefully designed gravity-fed water treatment system. If you apply these figures to construction across the UK, the CO2 reductions and cost savings are substantial.

Furthermore, the 'Rain Ready' system creates biodiversity enhancements through the reuse of the biodegradable matting, which is repurposed to keep soil on-site and create natural habitats, attracting local wildlife. Frog Environmental has ensured their solutions are safe for the environment. Working with regulators, they have created their own due diligence to test water to guarantee every site has a bespoke approach to silt control. Without effective silt management on-site, local watercourses will be polluted and create more pressures on ecosystems, causing long-term damage to already failing rivers. With Winvic as an early adopter of Frog Environmental's systems, this has led to other contractors following suit and embracing new ways of managing silt on-site to benefit the environment.

"The positive impact of your business on the wider industry is incredible. You have upskilled so many of us and definitely improved water quality across UK construction sites! Thank you." – Environmental Manager, Winvic

**Innovation**

Winvic were early adopters of product trials and technique refinement. They have collaborated for 7 years in bringing innovation to the industry through Frog Environmental's 'Rain Ready' water treatment systems. These are made with biodegradable materials or built for reuse across sites and have proven year-on-year to exceed water quality standards, removing pollutants including heavy metals (up to 99%) and Phosphorus (by 82%) from the water. R&D has been invested in these products and they are patented designs. The collaboration with Winvic has helped Frog Environmental develop and evolve techniques to ensure these are optimised to give the best water quality output, whilst being operationally easy to use across a variety of sites with often challenging topography or complex site restrictions.

**Organisation/Community Benefit**

Frog Environmental's 'Rain Ready' water treatment system and techniques have since been applied to other contractors' sites across the UK, and they too are benefiting from lower cost, lower carbon, and circular economy schemes that protect the environment. The technical team is often invited to share best practice at national and international events, including the International Erosion Control Association (IECA), where our Technical Director spoke about case studies and techniques for silt management on linear construction sites across the UK, including Winvic sites. They also ran a STEM

day at a local school. Frog Environmental offers free CPD to anyone in the industry eager to learn about silt pollution risks and how they can apply techniques and products which deliver sustainable practices and cost efficiencies.

As part of the circular economy model, community groups are supported through Frog Environmental's pallet return scheme, which Winvic is in the process of joining. Pallets are collected after delivery to site, and for each pallet returned, £10 is donated to a UK community fund project. They are currently looking at carbon offsetting improvements on pallet deliveries.

**Project Lessons**

Frog Environmental has learned a great deal about water treatment challenges across the different project sites, including working with 100% biodegradable materials, product deployment to maximise performance whilst reducing operating costs and carbon footprint, and learning how to protect natural habitats and increase biodiversity. There was also learning in naming the system to try and shift a reactive mindset to a proactive approach to ensure solutions were on-site ahead of rainfall. Once the rain comes, the damage is done, so it's about teaching site staff to plan ahead and be prepared. Project delivery and installation have been tweaked and refined, and this knowledge has benefited other client projects.

**Recognition & Awards**

This is the first time Frog Environmental has submitted their silt management techniques and products for an award. They are recognised for thought-leadership within the industry, often invited to speak at construction days and international conferences (IECA).

# G-COVE TECHNOLOGY GROUP

## INNOVATION IN PLANT-BASED MOLDED FIBER TECHNOLOGY THAT REPLACES ALL SINGLE-USE PLASTICS

### INTRODUCTION

G-COVE is pioneering the elimination of single-use plastics through innovative, sustainable solutions that aim to protect both the environment and human health. By focusing on reducing plastic waste and carbon emissions, G-COVE has successfully removed 7 million tons of plastic and cut down carbon dioxide emissions by over 10 million tons. This project encompasses green packaging solutions, waste management, and energy-efficient technologies, aiming to create a circular economy that minimises environmental impact while enhancing social, economic, and health benefits for all. G-COVE's commitment to sustainability sets a new standard for industries worldwide, proving that when the Earth thrives, so do humans.

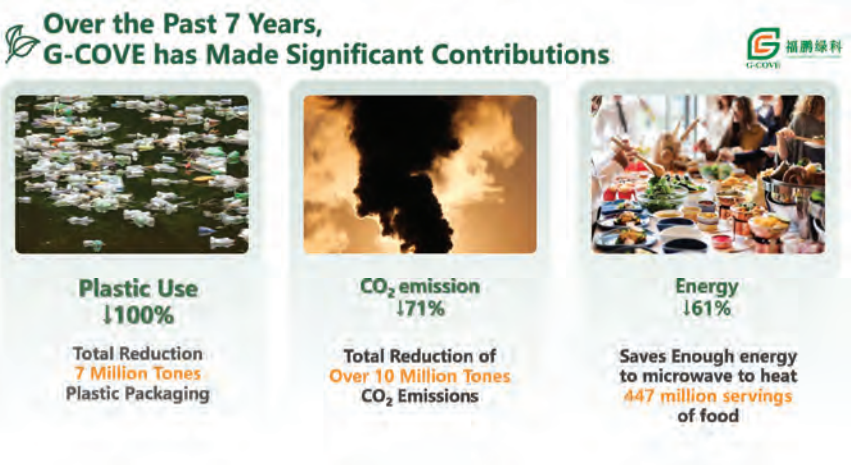
### IN DETAIL

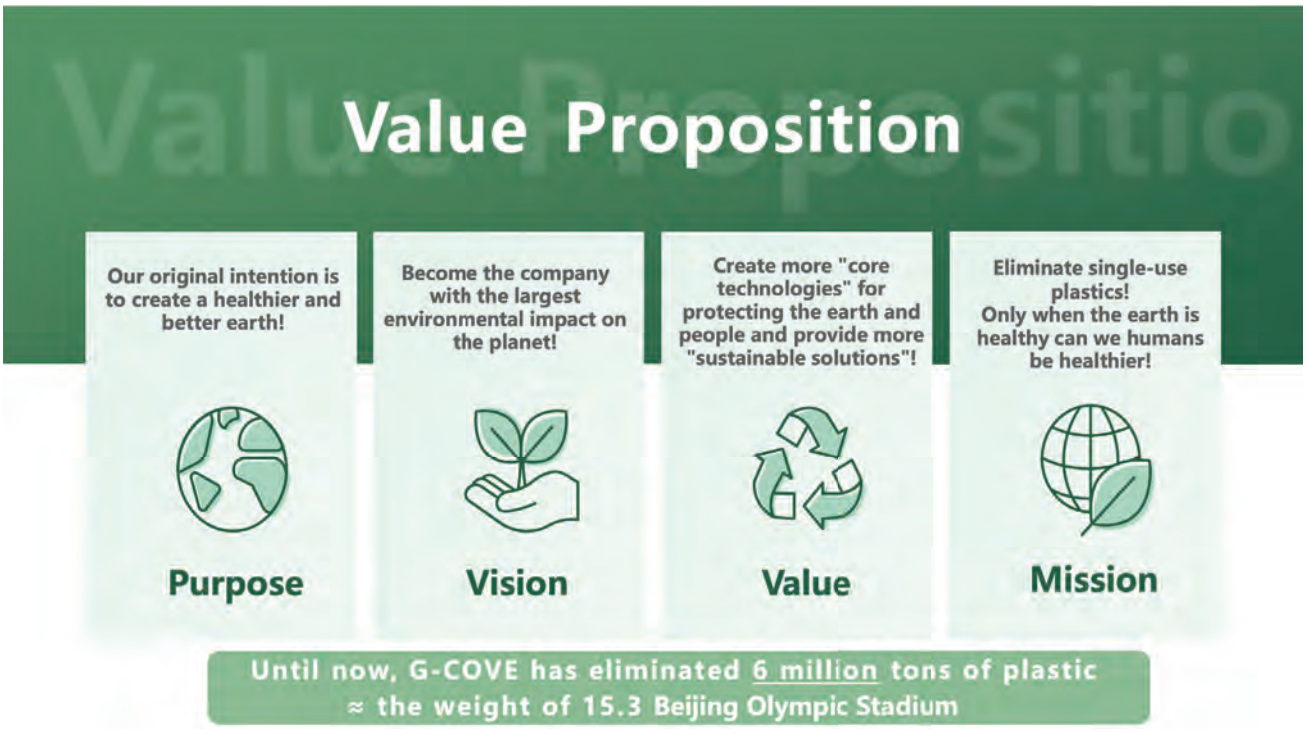
Our goal is to eliminate single-use plastics! Only when the Earth is healthy can we, as humans, truly be healthier. To date, G-COVE has successfully eliminated 7 million tons of plastic, while also reducing carbon dioxide emissions by over 10 million tons.

This initiative revolves around a comprehensive green packaging solution, with a "sustainable infinite loop" at its core. It begins with carbon sequestration forest management to source raw materials, where trees are planted to create carbon indicators and a carbon financial ecosystem. The project expands to the Fiber Extraction System (FES), which utilises agricultural waste plant resources to replace traditional chemical pulping. This approach reduces environmental impacts, including carbon dioxide emissions, wastewater pollution, and energy consumption.

Additionally, the project includes the development of environmentally friendly smart equipment (IoT) for the pulp molding industry, aimed at reducing energy consumption and enhancing automation. It also extends to an automated production line to meet customer product needs, incorporating supply chain technology and contributing to the industrial intelligence field, in line with China's Industry 4.0 era. Furthermore, the Bio-waste Processor (BWP) utilises probiotics to convert organic waste, such as kitchen scraps, agricultural residues, and food packaging, into fertiliser through a bio-synthetic process.

Over the past 7 years, G-COVE has achieved a 100% reduction in plastic usage, eliminating 7 million tons of plastic packaging. Carbon emissions have been reduced by 71%, which translates to a reduction of 10 million tons of carbon emissions. In addition, energy usage has decreased by 61%, equivalent to the energy needed to heat 447 million meals in a microwave.






The total investment in this project has exceeded 100 million RMB, primarily spent on equipment, with funds coming from internal resources.

Over the past 7 years, G-COVE has accomplished a significant reduction in plastic usage, achieving a 100% decrease and eliminating 7 million tons of plastic packaging. In addition, carbon emissions have been reduced by 71%, cutting down on 10 million tons of CO2 emissions, and energy consumption has been lowered by 61%, leading to energy savings equivalent to heating 447 million meals in a microwave.

The benefits of this project extend beyond environmental impact. By eliminating single-use plastics, we are not only helping protect our planet but also contributing to a healthier future for all. The urgency to act is clear: by 2050, there will be more plastic in our oceans than fish.

Looking to the future, the project promises several long-term benefits. Environmentally, it continuously reduces plastic pollution, protects natural ecosystems, and improves overall environmental quality. Socially, it fosters sustainable development, creates employment opportunities, and enhances quality of life. Economically, it reduces production costs, optimises resource use, and boosts corporate competitiveness. There are also brand benefits, as adopting eco-friendly practices attracts environmentally conscious consumers and elevates brand value. Health-wise, the project helps mitigate the harmful effects of chemicals on human health.

The project has been innovative in several ways. It has led to advancements in material science, such as the bio-fermentation extraction of plant fibers, which transforms the paper industry with zero pollution, low costs, and low energy consumption. In oil-resistant technology, the self-developed IRT™ zero-PFAS oil-resistant technology breaks the “performance-price-environmental protection” impossible triangle. Additionally, the self-developed third-generation fully automatic production line significantly enhances industry production efficiency.

Other organisations and communities can benefit from implementing similar methods. For instance, the bio-waste processor equipment, which converts

organic waste into fertiliser through a bio-synthetic process, can be used for tree planting and afforestation. The Fiber Extraction System (FES) uses agricultural waste plant resources to replace traditional chemical pulping, reducing environmental impacts such as CO2 emissions, wastewater pollution, and energy consumption.

Throughout this journey, valuable lessons have been learned. We've gained a deeper awareness of the importance of sustainable development, understanding how to balance environmental protection and resource efficiency while growing the business. Innovation capabilities have improved as we've focused on enhancing product quality and production efficiency through technological advancements. The project also emphasised the importance of team collaboration, as achieving a green packaging solution requires a unified effort across the industry chain. Additionally, we've reinforced the idea that businesses have an environmental and social responsibility to reduce negative impacts on the planet and make meaningful contributions to society.

# G-COVE®

Discover Sustainability, Uncover Science

# Global Leader In Sustainable Innovation

**100% Biodegradable**

**100% Compostable**

**100% Recyclable**

G-COVE Technology Group is a global leader in material science and a pioneer in plant-based fiber alternatives to plastics. Since its founding in 2017, the company has focused on developing innovative solutions to replace single-use plastics, with the goal of becoming one of the most environmentally impactful companies in the world. With the manifesto "Discover Sustainability, Uncover Science," G-COVE continues to grow, offering clear value propositions to its customers.

## Bamboo Fiber Packaging

### Food Packaging

Including coffee and beverage series, restaurant packing series, supermarket series, daily household series, microwaveable, refrigeratable, can be Oven, non-fluorine, oil-proof and water-proof.

### Industrial Packaging

Including agricultural products series, electrical appliances series, daily-use household goods series, other packaging series, with high strength and durability of good protection performance, both environmentally friendly and full of creativity.

Recyclable | Biodegradable | Compostable | Microwaveable | Refrigerable | Ovenable | Fluorine-free Oil Water Resistant

## All International Critical Certification

ISO 9001 | ISO 14001 | ISO 45001 | ISO 50001 | HALAL | BPI COMPOSTABLE | FSC | BRCGS Food Safety CERTIFICATED | SMETA | Sedex | eurofins | TÜV AUSTRIA INDUSTRIAL

GCOVE | www.g-cove.com | general@g-cove.com

# GALLIFORD TRY

## TOPHILL LOW WATER TREATMENT WORKS

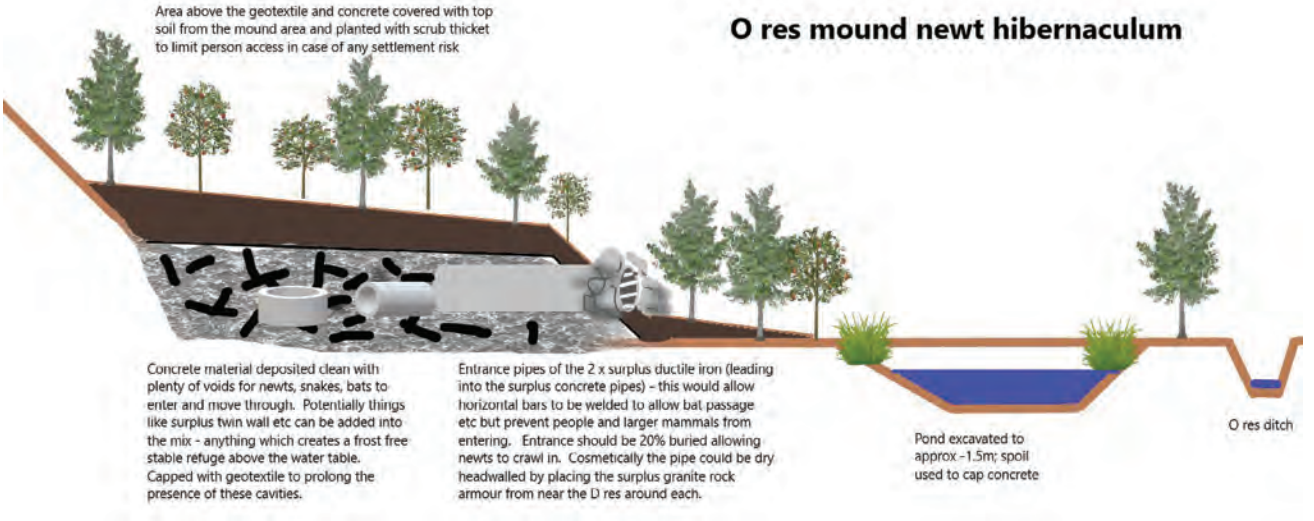
### INTRODUCTION

The reservoirs used for water supply at Tophill Low Water Treatment Works (WTW) produce algae blooms and cyanobacteria as a result of hot summers and high levels of agricultural phosphates and nitrates in the water, causing subsequent issues with water quality, taste, and odour for the end user. The current treatment method used to combat this is expensive to bill payers and results in significant quantities of non-recoverable material backwashing into filter beds. Therefore, Yorkshire Water proposed a solution, with plans to develop and construct a new treatment process.

However, the existing site did not have any spare land for the required treatment infrastructure. To make this possible, Galliford Try were given a contract which involved removing and landscaping a significant area of historic inert material that had been left on site from decades of water treatment construction works. This would allow Yorkshire Water to install the new treatment system and would also repurpose historical deposits of material, which would otherwise have been sent for off-site disposal. The aim was to use this material for something positive, replacing and upgrading outdated visitor facilities on the surrounding nature reserve.

Galliford Try's work involved repurposing material within the water treatment works, making significant savings on waste to landfill, as well as helping create new viewing platforms for the visitors to the nature reserve. The works diverted 25,050 tonnes in total from landfill and saved the taxpayer an estimated £3 million. This repurposing of material also reduced the need for wagon movements in and around the local villages, removing 2,872 20-tonne wagon movements and an estimated 105 tonnes of carbon.

The repurposed historic material was used to create a new disabled access viewing platform for 'O' reservoir. The access was designed and developed with a gentle gradient and dedicated rest areas, allowing for inclusive reservoir viewing for the first time ever. Furthermore, the project utilised some of the recovered materials from the existing spoil stockpile to develop the biggest newt and snake hibernaculum in East Yorkshire, providing a suitable habitat that amphibians and reptiles can use throughout the winter to protect themselves from the cold.



## IN DETAIL

Galliford Try's works involved removing and repurposing a large mound of historic inert material which had been deposited on-site from numerous previous Yorkshire Water capital delivery schemes. This would give Yorkshire Water the required space on site to install a new Granular Activated Carbon (GAC) plant to treat drinking water for the local area more effectively and sustainably. This is a time-sensitive critical path milestone in the overall Yorkshire Water scheme that plays an essential part in ensuring the new water GAC process can be installed on site and on time, to meet DWI (Drinking Water Inspectorate) requirements.

In order to avoid expensive and disruptive off-site waste disposal, the material was repurposed within the existing site, to create a new disabled access viewing platform for 'O' reservoir. The access was designed and developed with a gentle gradient (1:20 incline) and dedicated rest areas, allowing for inclusive reservoir viewing.

In line with the waste hierarchy, Galliford Try aim to divert waste from disposal and landfill where possible. As well as this, there were a number of indirect benefits including savings in both cost and carbon, a reduction in vehicle noise and emissions, as well as reduced damage to access roads (from vehicle movements). As a result of this, it was a mutually beneficial decision to use the material on site to develop a new viewing platform, rather than exporting material off site at a high cost. This methodology of working also aligns with Galliford Try and Yorkshire Water's sustainability commitments.

These works form part of a wider Yorkshire Water scheme within Tophill Low Water Treatment Works and is part of Yorkshire Water's £31 million investment scheme. This specific aspect of Galliford Try's work, however, is valued at just under £1 million.

The project's main achievement was related to the Equality Act 2010. Viewing platforms and bird hides within Tophill Low need to be in an elevated position to allow for views over the reservoir wall. Previously, they were only accessible via steps, therefore Galliford Try profiled materials in a manner that

allowed for the creation of wheelchair-accessible viewing platforms. This in turn enhances the visitor experience within the nature reserve. Sustainable development was at the heart of this project, and this is reflected in cost savings of £3m, which would have conventionally been funded by bill payers. The works also enhanced biodiversity within the area with the creation of new habitats in the form of a hibernaculum, a pond, which has since been confirmed as holding breeding great crested newts, and a bat hibernaculum (already being used). In addition, 3,200 native trees were planted to replace previous low-grade plantation on site.

The local community benefited from these works as there would have been significant disruption from multiple lorry movements, required to remove historic material from the site as waste. As this was not required, movement of material was contained within the reserve boundary and the local community impacts were minimal.

The derelict former social club and visitor centre on the reserve were converted into project offices to save on welfare hire; which was then returned to the reserve as a new volunteering hub on completion of the project leaving a lasting legacy. Two electric vehicle charging points were also installed as part of the works, which have been retained on site for future use. Existing timber frame access steps to the bird hides were a significant maintenance burden for Yorkshire Water. Using spoil to create the new access ramp has significantly reduced required ongoing maintenance going forward.

Goats were utilised as the first contractors on site. Vegetation needed to be controlled to ensure that a habitat for nesting birds was not created in areas that would be impacted by construction works. Due to the emotive location, overlooked by residential properties and nature reserve visitors, conventional cutting or spraying was not the best option. A herd of Boer goats, therefore, were used to graze the area, ensuring it was ecologically safe to start work.

The development of the reptile and amphibian hibernaculum was innovative as it was created primarily with existing material available on site, including clean concrete debris and inert spoil from the mound area. This was also constructed in a slightly elevated position, which allows for shelter not only in the winter but also in times of flooding. Green hay was used to revegetate the slopes of the

new mounds, using seed heads cut from existing stewardship meadows on site to ensure maximum biodiversity from local provenance.

As the majority of reservoirs have raised boundary walls, the construction of elevated viewing platforms is a consistent requirement in order to allow visitors to birdwatch and enjoy the views. As a result of this, the utilisation of inert spoil to create disability-friendly access could be implemented as best practice elsewhere (where planning conditions allow). It is Yorkshire Water's understanding that other nature reserves within Yorkshire have already put similar plans forward to the planning department for consideration and approval.

Galliford Try's work on this project improved its understanding of the importance of construction optioneering, looking at opportunities to reduce environmental impacts and waste in the design stage. While the works were being undertaken, the site had to be temporarily closed to visitors, however, this could not be avoided as the use of heavy plant and equipment posed a health and safety risk. The scheme was so successful there have already been inquiries as to whether a third platform could be incorporated on site.

# GEORGE YARD SHOPPING CENTRE

## LET'S EMBRACE CHANGE AND HELP THE WORLD

### INTRODUCTION

Using the waste hierarchy of control, we aim to continue innovating in repurposing and eliminating waste. Where this isn't feasible, we ensure that all recycling opportunities are explored and implemented. Our target is to recycle 80% of the waste entering our stream, and we are committed to working with external stakeholders to improve working conditions, promote mental health and well-being, and reduce emissions, along with our overall carbon footprint.

We also strive to be a hub in our community, helping others and using our position to educate, raise environmental awareness, and promote sustainability. At the centre level, retailers have reduced food waste entering our stream by either cutting back or donating surplus food to good causes. We've also had constructive conversations with retailers about removing certain products from sale, including one retailer that agreed to eliminate bottled water and offer free tap water instead.

Our soft service provider, OCS, has been given the opportunity to grow fruit and vegetables on-site, promoting both health and well-being. An independent retailer is even in discussions with us about using these locally grown products, which further reduces our carbon footprint. Similar initiatives include expanding our waste storage facilities, cutting down the need for pickup and transportation.

We've also met our goal of supporting the community by launching our Artisan Market. One example is the foodbank, which now benefits from having a dedicated space and an on-site representative to assist those in need—an effort that was recognised by the CSR awards.

Lastly, we've made significant strides in recycling, with our current recycling rate at 82%, a remarkable improvement from 51% in 2021.

### IN DETAIL

Our pledges to improve the environment have remained consistent; however, we have ensured that they have been reviewed and improved each year since we began applying for the Green Apple and CSR Awards. We agreed to take an audacious approach and set a goal of a recycling rate of 80%, with a target of a 10% increase each year. To make sure this was an achievable target, we created a document outlining our accomplishments, our goals, and how we planned to achieve them. I have included supporting documentation for the judges' reference and consideration. The first item is Savill's Sustainability Silver Standard, an improvement on the previous bronze award.

Our plans were designed to be simple but effective, as summarised below: Pallets would be stored and only collected when there were a minimum of 150 in storage; this year, the target number for 2024 represents a 50% increase compared to last year's requirements. This would reduce transport emissions by ensuring that collections are at total capacity. Additionally, all cardboard would be flat-packed to maximise storage space, reducing the frequency of collections and, in turn, reducing transport emissions. We would also use larger compactor skips to reduce transport costs and emissions by requiring fewer collections.

We committed to ensuring that our waste provider and broker only use local companies for waste collection and processing. A further target was to ensure that the destination of the waste would be as local as possible. In addition, we planned to continue working with food and beverage occupiers, primarily to reduce food waste but also to ensure that any excess food was diverted from the waste stream. When occupiers undergo refits, we would consider repurposing items such as lockers and furniture. If these items were unsuitable for other occupiers, we would continue working with local charities. Furthermore, coffee grounds would be used to fertilise the centre's plants and trees, and landscaping waste would be converted into compost.

The site team would advocate for change by growing their own vegetables on-site, with the goal of raising awareness around food waste and improving their health and well-being. We would also promote the benefits of recycling and volunteer for good causes, such as litter picking, within our community. We also planned to offer free promotional space to community groups wishing to highlight good causes, including food recycling. This leads to the second supporting document, "Sustainability Submission Silver Standard." The format was the same, and it serves as a KPI for all Centre Managers at Savills. It gave the shopping centre an excellent opportunity to align with Savills' objectives, showcase our commitment, and allow other schemes to adopt relevant ideas.

For example, as part of Savills' Managing to Give Pledge, we aim to offer free promotional spaces to our community and local organisations. Essex County Council is one of the organisations that frequently joined us, as shown in our slides. They request space to promote recycling, and the centre supported them by promoting their event on the day we encouraged occupiers to visit them. Representatives from George Yard Shopping Centre, including myself and the marketing company Velocity, attended. I spoke with retailers such as Co-operative, Poundland, Superdrug, and Boots, who are now offering to be recycling points for

customers, including for soft plastics, empty beauty products, and blister packs from medical prescriptions.

As part of broader innovation, we successfully worked with one of our retailers, who committed to removing bottled water from sale and offering free tap water instead. We are also in early discussions about food operators using our site-grown vegetables. Externally, the centre is frequently used as a case study for Savills and the landowners, showcasing the great work we are doing for the environment while saving money. An example of the most recent case study is attached.

For 2022, despite the challenge of more retailers joining the scheme and occupiers' sales increasing, the centre was able to increase recycling to 62%, equating to 101 tonnes, compared to 70 tonnes in 2021. In 2023, the centre continued to meet the project goal, and we increased recycling further to 70.94%. We recycled 118 tonnes of rubbish, up from 101 tonnes. I'm also delighted to report that, year to date, we are currently recycling 82% of our waste.

# GLASDON GROUP LIMITED

## ORIGIN RANGE OF ENVIRONMENTAL LITTER AND RECYCLING BINS

### INTRODUCTION

The aim of the project was to design an external litter and recycling bin with a 110L capacity, suited to external environments such as parks and leisure venues, and manufactured from as high a percentage of recycled materials as possible. The outcome of the project resulted in two new models of external litter and recycling bins: the Origin Curve 110 and Origin Horizon 110. Both are part of a highly recycled and recyclable range known as Origin. These bins have already been specified for locations such as public parks and open spaces. The Origin range is made using 86% recycled material.


### IN DETAIL

**What did the project involve doing?**

Glasdon designed the product from scratch with a design concept built around interchangeable pre-assembled slatted panels that fit within the recycled aluminium (Vandalex®) frame. The panels are manufactured from recycled HDPE (Enviropol®) in an intrusion mould process from tongue and groove profile slats. The bin features a rotationally moulded LLDPE (Durapol®) hood and plinth into which the corner posts and side panels assemble onto. We developed a supply partnership with Hydro Aluminium, County Durham, producers of extruded aluminium components in high percentages of recycled aluminium, including the material used to manufacture the Glasdon-designed aluminium corner posts. Hydro's Recycled Aluminium 6.0 material includes 78% recycled material (65% Post Industrial sourced and 13% Post Consumer sourced).

A Glasdon-designed intrusion moulded recycled polymer tongue and groove slat is supplied from a company based in Manchester and is produced in 100% recycled HDPE (90% Post Consumer sourced and 8% Post Industrial sourced). The Glasdon-designed hood and plinth are manufactured by a plastic rotational moulding process in a 100% Post Industrial sourced recycled polyethylene. The material originates from waste recycled within

the production facility they come from, meaning it does not need to be sent for external processing to minimise transport carbon emissions. The supplier is based in Blackpool, which further minimises transport emissions of components to Glasdon.

**Why did you do it?**

Glasdon's leadership team has committed the company to a pledge of achieving Net Zero Carbon Footprint by 2035 for all its business practices. Our design philosophy and product development strategy are based on manufacturing products from as much recycled material as technically possible, for those products to have a long service life and to be recyclable at the end of their life. With the new Origin, all major components are manufactured in the North of England, within a 100-mile radius of where the product is assembled.

We also had the intention of reducing the manufacturing costs compared to an existing environmental litter bin which Origin supersedes. Cost savings of over 10% have been achieved while increasing the amount of recycled material the product contains.

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

Capital investment of £60K was spent on the tooling required to manufacture aluminium extrusions, recycled polymer intrusions, and recycled polymer rotational moulded hood and plinth. Glasdon's capital investment in tooling to manufacture its products is self-funded and owned by Glasdon.

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

The Origin range is manufactured using 86% recycled material, making it our most sustainable external litter and recycling bin.

**Who and what benefitted?**

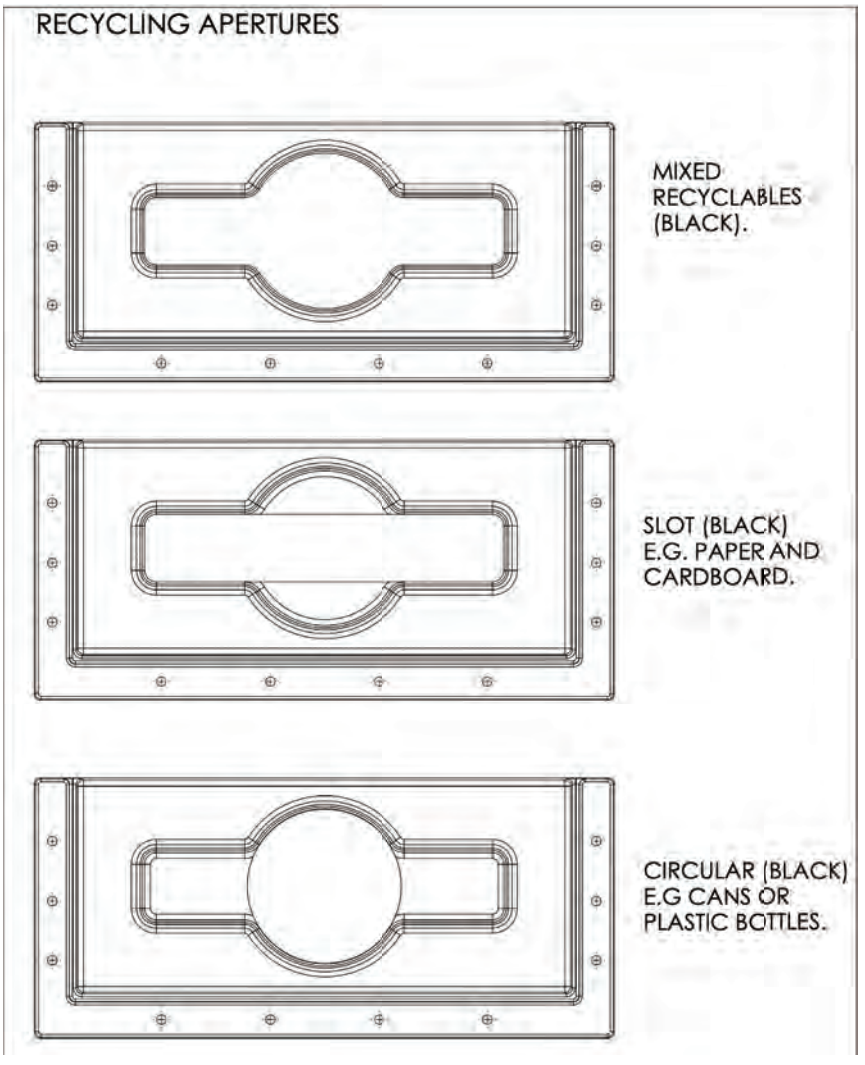
Facility and Sustainability Managers at Local Authority and privately owned leisure venues are increasingly attracted to products they purchase that align with their sustainability commitments. Origin's high recycled material content provides a quantifiable metric to help specifiers demonstrate compliance with these ambitions.

**Longer term benefits?**

Origin bins are designed to last with a long service life. Our products are vandal-tested using a series of rigorous tests, simulating real-world abuse. Repeat operation testing of mechanisms such as door hinges, locks, and flaps gives us a clear appreciation of the product lifespan, and we are confident that the product will be fit for use for years if properly serviced and maintained. We think that is truly sustainable.

Origin, being the beginning of a new product range, means that products for other purposes will follow that are also manufactured from high percentages of recycled materials. We also plan on developing a process where manufacturing waste, such as assembly scrap, rejected stock, and off-cuts from our manufacturing site at Blackpool, are sent to the Manchester-based supplier of the tongue and groove recycled polymer slats for use in producing these parts. This way, our own waste is being turned into long-lasting products rather than disappearing into the recycled polymer ecosystem.

Further, Origin has been designed for ease of disassembly and recyclability at the end of its product life. Mechanical fastenings can be removed, and all the constituent materials separated for recycling. By increasing demand on suppliers who manufacture using recycled materials, we are in turn supporting the investment in those sustainable manufacturing processes for their growth.




**Was there anything innovative about the project?**

The design concept of using aluminium corner extrusions offers up a host of variations of the Origin bin and is unique in this type of product. The receiver element of the extrusion has been designed to accept standard sheet thicknesses from 12mm to 21mm. This allows several types of recycled sheet material to be used to construct the sides and door of the bin. That includes alternative recycled polymers from specific Post Consumer sources, or other recycled materials entirely, such as Bamboo.

The modular nature of the recycled aluminium framework means that varied sizes and configurations of waste and recycling units can be produced using the same parts to keep manufacturing wastage to a minimum.

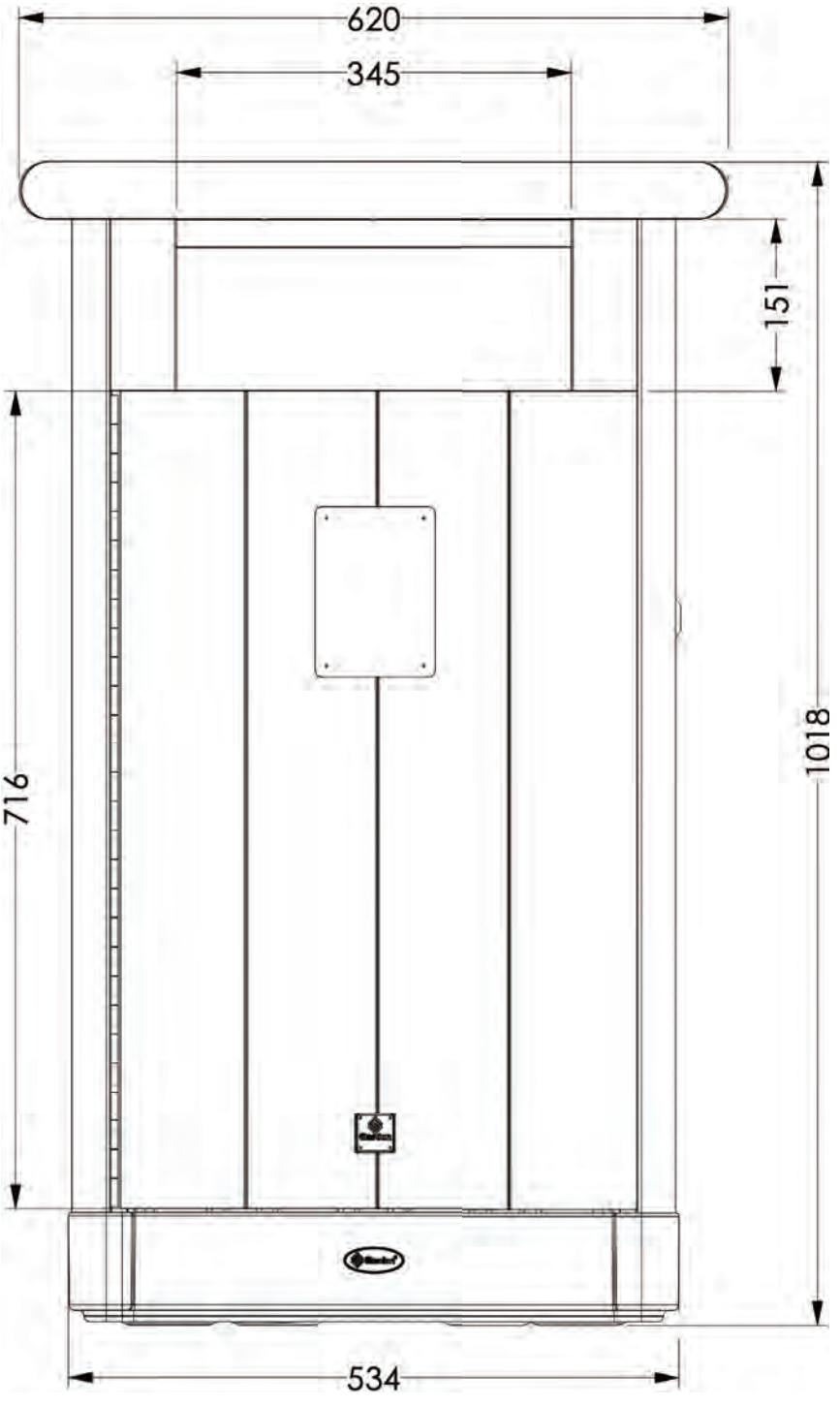
**Can other organisations/ communities benefit from implementing your methods?**

We position ourselves as market leaders within our product categories and are confident that by us driving towards a strategy of more sustainable products, our competitors will follow. As a result, customers will benefit from a greater availability of recycled material and sustainable product options to choose from.

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

Upon completion of the project, we have a greater understanding of the wealth of recycled material panels that are available. Having also established relationships with the likes of Hydro Aluminium, we are now aware of the availability of high recycled content and low carbon footprint aluminium extrusions. Aluminium extrusions are widely used in our shelters, buildings, and housings, so we shall infuse this knowledge to benefit several product categories.

Origin is the beginning of a new product range that is destined to develop into a substantial sustainable product portfolio to suit a range of applications not limited to waste management and recycling.



# HANG TUAH JAYA MUNICIPAL COUNCIL

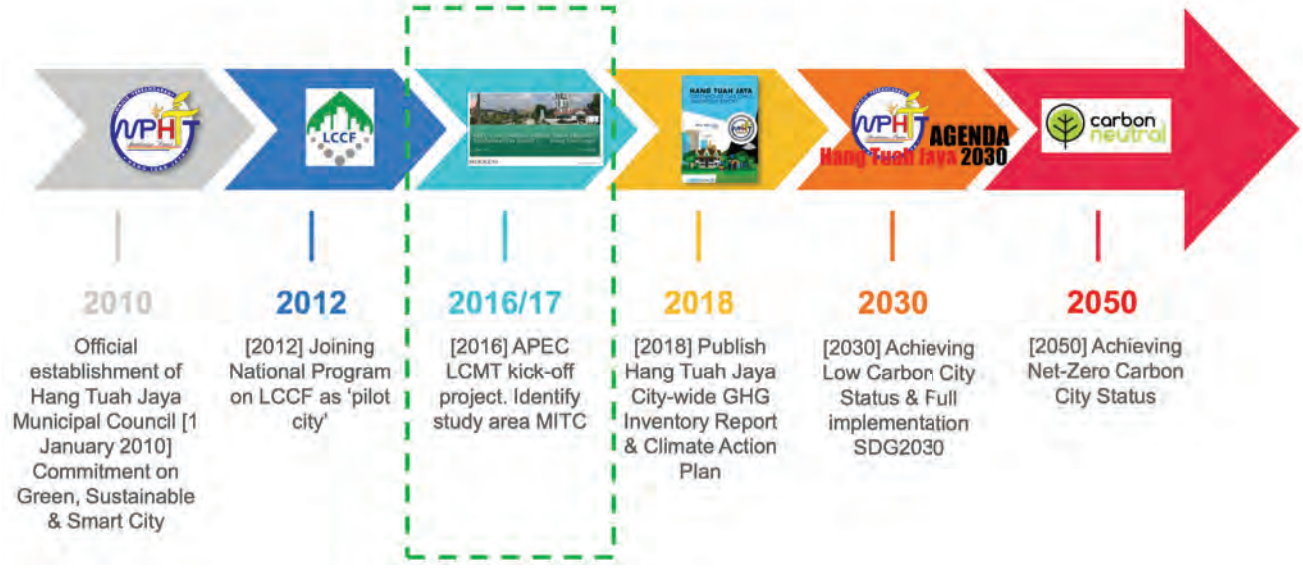
## HANG TUAH JAYA LOW CARBONHANG TUAH JAYA GREEN AMBASSADOR PROGRAMME

### INTRODUCTION

The project is designed to raise awareness and foster a sense of belonging among municipal staff, positioning them as key agents and champions for change within the community. Focused on educating the public about climate change, the initiative is part of the 'Education for Sustainable Development' (ESD) program. This project directly supports the city's vision to become a Low Carbon City by 2030, with an ambitious goal to reduce carbon intensity by 45%. By empowering municipal staff and strengthening community capacity, the project aims to bridge the gap between implemented physical projects and the readiness of the local population, particularly in terms of climate change awareness and engagement.

### IN DETAIL

The core objective of this project is to increase awareness and build a sense of responsibility among municipal staff, enabling them to champion climate action within the community. By incorporating the principles of Education for Sustainable Development (ESD), the programme focuses on delivering critical climate change knowledge. This initiative directly contributes to Hang Tuah Jaya City's overarching goal to reduce carbon emissions by 45% and position itself as a Low Carbon City by 2030.



# Environmental Best Practice
Volume 29


A significant part of the project is aimed at closing the gap between physical climate change initiatives implemented in the city and the level of awareness at the community level, especially among municipal staff. This is crucial because the success of long-term sustainability efforts depends on the ability of local staff to not only implement solutions but also to engage with and educate the public on the importance of these measures. This programme is designed to ensure that municipal staff are equipped with the knowledge and tools needed to serve as effective agents of change, both within their own teams and across the wider community.

Furthermore, the project is aligned with Hang Tuah Jaya City's sustainable development strategy, contributing to the city's broader efforts to meet its carbon reduction targets. Through this initiative, the city will strengthen its capacity to address the fundamental challenges posed by climate change and move closer to achieving its goal of becoming a Low Carbon City by 2030.

**Mitigation Target:**

*"As City Manager, we committed to* ***reduce 665,000 tCO2e*** *by 2030 relatively to the BAU scenario; to achieve the level of* ***0.072 intensity Carbon per GDP*** *(reduction of 45%) to support national vision and commitment"*

**MITIGATION**

**Adaptation Goal:**

- Reduce property damage caused by monsoon and flooding by 2030
- Reduce the number of dengue cases by by 2030
- Reduce the days of water rationing caused by drought by 2030

**ADAPTATION**

**Current Level / Projection / Target:**

To increase green cover in the city for lowering temperature and carbon sequestration

**OFF-SETTING**

# HULL COLLEGE

## RISING TIDES, RISING MINDS

### INTRODUCTION

The “Rising Tides, Rising Minds” project aimed to create a comprehensive environmental training programme developed in collaboration with employers across all employment sectors in the Humber region. The initiative sought to integrate theoretical training with hands-on practical work by partnering with local businesses and third-sector organisations. This dual approach ensured that students gained essential skills in sustainability and renewable energy and also applied their knowledge through active participation in community and environmental projects, promoting real-world impact and long-term regional resilience.

Hull College’s “Rising Tides, Rising Minds” initiative is a transformative educational programme dedicated to sustainability and renewable energy in the flood-prone Humber region. As one of the UK’s highest-risk areas for climate-related flooding, Hull faces unique environmental challenges. To date, this project has equipped over 2,651 students and 200 staff with critical skills in sustainability and renewables, fostering a culture of environmental stewardship.

Through bespoke courses and collaborations with over 100 leading businesses, Hull College prepares its community to combat climate change and drive industrial decarbonisation. By addressing the urgent


need for sustainable education in a high-risk area, Hull College has helped mitigate local climate threats and set a benchmark for other institutions who aspire to embody resilience, innovation, and the relentless pursuit of a greener future.

## IN DETAIL

The “Rising Tides, Rising Minds” project involved creating a comprehensive environmental programme that combined theoretical training with hands-on practical work. This initiative was developed in collaboration with employers across all employment sectors in the Humber region. The project aimed to integrate sustainability and renewable energy education into the curriculum, ensuring that students received both the knowledge and practical experience needed to address environmental challenges.

To achieve this, the programme provided a variety of activities and training modules. These included sustainability projects like beach clean-ups at Spurn Point, in collaboration with Yorkshire Wildlife Trust and The Deep, and habitat restoration efforts. The curriculum also covered practical skills in sustainable construction, renewable energy technologies, and water conservation. For instance, the Green Energy Laboratory was equipped with wave energy units, air source heat pumps, experimental wind tunnels, hydropower units, and hydrogen energy kits, enabling students to engage in research, experimentation, and education in renewable energy.

Additionally, the programme included partnerships with local businesses and third-sector organisations to ensure the curriculum was industry-relevant and impactful. For example, students collaborated with The Critical Fish, an artist-led arts magazine,

to produce art, audio, and critical writing focused on climate change, enhancing their creative skills and raising environmental awareness. Other collaborations included providing hands-on training in hybrid and electric vehicles and Advanced Driver Assistance Systems (ADAS) to prepare students for the future of transportation.

**Why did you do it?**

The project was initiated to address the urgent need for sustainable education and workforce development in the Humber region, an area prone to flooding and high carbon emissions. By equipping students with essential skills in sustainability and renewable energy, and involving them in practical community projects, Hull College aimed to foster a workforce ready to tackle current and future environmental challenges. This initiative sought to promote long-term regional resilience and inspire a culture of sustainability among students, staff, and the wider community.

Additionally, the project aimed to bridge the gap between education and industry by ensuring that students received industry-relevant training and real-world experience. This approach not only enhanced the employability of graduates but also ensured that they were well-prepared for careers in the renewable energy sector. The hands-on practical work component of the programme was designed to foster a sense of community responsibility and provide students with valuable, real-world skills.

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

The project was achieved with a zero budget, relying solely on existing human resources and partnerships with local businesses and organisations. This demonstrates effective resource management and proves that significant sustainability outcomes are possible even with constrained resources. By leveraging the expertise and resources of partners, Hull College was able to create a comprehensive and impactful programme without the need for additional funding. This approach highlights the importance of collaboration and resourcefulness in achieving sustainability goals.

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

The “Rising Tides, Rising Minds” project achieved significant outcomes in terms of sustainable development, economic impact, environmental benefits, and social equity. Quantitatively, the project equipped over 2,651 students and 200 staff with essential skills in sustainability and renewable energy, directly contributing to regional sustainability goals.

Economically, the programme enhanced the employability of graduates by providing industry-relevant training and practical experience. This ensured that students were well-prepared for careers in the renewable energy sector, supporting the local economy by developing a skilled workforce.

Environmentally, the project reduced campus energy consumption and waste, directly contributing to regional sustainability goals. These actions helped mitigate the environmental impact of the college and set an example for other institutions and the local community. The hands-on projects, such as beach clean-ups and habitat restoration, promoted environmental stewardship and increased awareness about marine conservation and sustainability.

In terms of equity, the programme supported local employment by developing and delivering short courses for unemployed adults considering careers in construction. These courses covered health and safety, teamwork, job application, and sustainability, ensuring that new workers in the construction industry were equipped with essential sustainability knowledge. Additionally, the project collaborated with local charities to cook with surplus food, reducing food waste and providing meals for the homeless, demonstrating practical applications of sustainable cooking and social responsibility.

**Who and what benefited?**

Students, staff, local businesses, and the wider community benefited from the “Rising Tides, Rising Minds” project. Students gained practical skills and real-world experience, enhancing their employability and readiness to tackle global environmental challenges. The integration of sustainability into various disciplines, such as engineering, construction, hospitality, and creative media, ensured that all students graduated with a robust understanding of sustainable practices.

Staff received training in renewable energy and sustainability, improving teaching quality and fostering a culture of continuous professional development. This upskilling inspired staff to integrate sustainable practices into their personal and professional lives, creating role models for students.

Local businesses benefited from a skilled workforce, well-prepared for careers in the renewable energy sector. The partnerships established through the programme also opened up new opportunities for collaboration and innovation.

The wider community benefited from the active involvement of students in local environmental projects, which strengthened community ties and promoted environmental stewardship. These projects helped build stronger, more resilient communities better equipped to face environmental challenges.

**Longer term benefits?**

The project has created a lasting impact by embedding sustainability into Hull College’s educational programmes, staff development, and campus operations. This has fostered a culture of shared purpose and collective responsibility, ensuring the institution remains inclusive, forward-thinking, and resilient.

The integration of sustainability into the curriculum across various disciplines has enriched the educational experience, providing students with relevant, real-world skills that enhance their employability. The skills and knowledge gained by students and staff will continue to benefit the local economy and environment for years to come.

The scalability and replication potential of the programme allow other institutions to adopt and adapt the model, amplifying the impact of Hull College’s efforts. This ensures that successful strategies can be shared and implemented widely, promoting global sustainability.

**Was there anything innovative about the project?**

The project was innovative in its dual approach of combining theoretical training with hands-on

practical work. By integrating sustainability across various disciplines, the programme prepared students to think critically about sustainability in all aspects of their careers. The use of existing resources and strong industry collaboration without a dedicated budget demonstrated innovative resource management.

The establishment of the Green Energy Laboratory, equipped with advanced renewable energy technologies, promoted research, experimentation, and education in renewable energy, positioning Hull College at the forefront of sustainable energy solutions and innovation.

The collaboration with The Critical Fish, an artist-led arts magazine, engaged students in creating art, audio, and writing on climate change, making the topic more relatable and impactful through mixed media.

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

Yes, other organisations and communities can benefit from implementing our methods. The programme is designed to be replicable and scalable, allowing other institutions to adopt and adapt the model. This approach ensures that successful strategies can be shared and implemented widely, promoting global sustainability.

The hands-on practical work component, combined with theoretical training and strong industry collaboration, provides a robust framework for sustainability education that can be tailored to different contexts and regions. By sharing best practices and lessons learned, Hull College can inspire and support other institutions in developing similar programmes.

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

We learned that integrating sustainability into education requires a comprehensive approach involving collaboration with industry and community engagement. The project highlighted the importance of hands-on practical work in reinforcing theoretical knowledge and fostering a sense of community responsibility.

We plan to further develop the programme by expanding partnerships with local businesses and organisations, enhancing the curriculum, and exploring additional sustainability initiatives. Future developments will focus on deepening the integration of sustainability across all disciplines and increasing opportunities for students to engage in practical environmental projects.

# INDURENT

## FRUIT TREES, WILDFLOWERS AND HERBS

### INTRODUCTION

It is common knowledge that bees and other pollinators are integral to our lives and survival, providing a natural source of farming, pollinating our crops and orchards, whilst producing an amazing bi-product, honey. As we have twelve bee hives on site and as part of our celebration of the RHS 60th Anniversary, we thought it a good idea to add to the biodiversity of plants available to our bees by planting some fruit trees and wildflowers in areas that were currently mowed lawns. In addition, we challenged our Ground Maintenance Team's Apprentice to build us a small herb garden.

We aimed to provide spots of natural beauty to enhance the Park's appearance, creating places for our tenants to spend time and enjoy, while also benefiting our pollinators. We have successfully created three new points of interest for our occupiers to enjoy and added to the site's biodiversity in a way that will benefit our onsite bee hives and the many other pollinators that populate our site.

Our next improvement to these areas is the addition of more picnic benches to ensure that people can sit and enjoy the space in their spare time. Once the fruit trees are mature, we will have a crop of fruit that can be enjoyed by our tenants for free. We are also looking to provide cuttings from our trees to local community groups that may benefit from them.

### IN DETAIL

Bees and other pollinators play a crucial role in our ecosystem, supporting agriculture by pollinating crops and orchards while also producing honey. Since we have twelve beehives on-site, and in celebration of the RHS 60th Anniversary, we decided to enhance the biodiversity available to our bees. We did this by planting fruit trees and wildflowers in areas that were previously just mowed lawns. Additionally, we challenged our Grounds Maintenance Team's Apprentice to create a small herb garden to further contribute to the park's natural offerings.

We wanted to provide spots of natural beauty, creating places where our tenants could spend time and enjoy themselves, while also benefiting our pollinators. To achieve this, we engaged with our Grounds Maintenance contractor, Peter Ashley Ltd, to identify three suitable areas for the fruit trees and wildflowers. These areas needed to not only be ideal for growing but also easily accessible to our Occupiers and their staff. Peter Ashley's team responded quickly and efficiently, presenting a plan to plant 30 trees across three locations, with 10 trees in each area. The trees

would include a mix of apple, pear, and plum. Each location would also be under-sown with wildflowers, enhancing the aesthetic and providing more opportunities for pollinators.

To bring this initiative to the attention of our Occupiers, we organised a tree planting day. Various Occupiers, contacts within our key suppliers, and the Mayor of Rochdale were invited to join us in the morning to help plant the trees. After the planting, attendees were invited to a buffet lunch, promoting a sense of community and engagement. Once the tree planting was complete, the area was prepared for the sowing of the wildflower seeds. This process took place in May, and we didn't have to wait long to see the area come to life, first with the trees blossoming and then bearing fruit, followed by a vibrant display of wildflowers. (If you look closely at the picture of the poppy in the attached document, you can spot a busy bee going about its day.)

In addition to the tree and wildflower planting, our Grounds Maintenance Apprentice was tasked with creating a herb garden as a special feature for our occupiers. Using abandoned pallets and paint we already had in stock, he designed a practical and attractive herb garden, which is now prominently located next to the Estate Management Office. The total investment for the entire project was approximately £1400, with labour provided by volunteers and our in-house team. This amount covered the costs of the fruit trees, wildflower seeds, herbs, and other materials.

We have successfully created three new points of interest for our Occupiers to enjoy while adding to the site's biodiversity in a way that will benefit our onsite beehives and the many other pollinators that populate the site. Our next planned improvement for these areas is the addition of more picnic benches, ensuring that people can sit and enjoy the space


during their spare time. Once the fruit trees mature, we will have a crop of fruit that tenants can enjoy for free. Additionally, we are considering providing cuttings from our trees to local community groups that might benefit from them.

Heywood Distribution Park is set on approximately 200 acres of land and houses 62 units, providing 2 million square feet of lettable space. Landscaping is of particular importance to us, and we take great pride in the presentation of the Park.

# JOHN O'CONNER LTD

## BEE CORRIDOR – LETCHWORTH

### INTRODUCTION


John O'Conner Pest Control and Grounds Maintenance divisions have partnered with North Herts Council to create an exciting new "Bee Corridor" in Letchworth. This project aims to enhance local biodiversity by establishing habitats for pollinators, particularly bees, which have been declining due to habitat loss and pesticide use. The bee corridor will feature a variety of bee-friendly flowers, shrubs, and trees such as lavender, foxgloves, and hawthorn.

A key component of the project is community engagement through the "Bee Part Of It" initiative, which organises events like educational talks on bees' environmental importance and hands-on activities, such as seed planting. The goal is to raise awareness about the crucial role of bees in our ecosystem and the need to create sustainable habitats for their survival.

The project has already made a significant impact, not only by supporting local bee populations and enhancing biodiversity but also by stimulating local businesses. Shops, pubs, and garden centres in the area have benefited from the initiative, as they incorporate bee-friendly plants into their spaces, attracting more visitors and fostering a sense of community pride.

Environmentally, the project has transformed green spaces, increased wildflower areas, and boosted bee populations, contributing to the overall health of the local ecosystem. Community involvement has been central, with activities such as guerrilla planting, creating bee bombs, and building bee hotels, all of which promote collective responsibility for environmental stewardship.

The success of the "Bee Part Of It" initiative sets an inspiring example for other communities, highlighting the immense benefits of collaborative efforts in environmental conservation and sustainable development.

### IN DETAIL

This initiative is part of a larger effort to promote biodiversity and create habitats for pollinators, especially bees, which have been declining due to habitat loss and pesticide use. The bee corridor will feature a variety of plants known to attract bees, including lavender, foxgloves, and hawthorn. Additionally, the project has involved organising community events under the "Bee Part Of It" initiative, which include educational talks about the importance of bees and hands-on activities such as seed planting.

The primary goal of the project was to enhance the local environment to support bees, which are


essential pollinators for many plants, including those that produce much of our food. The idea for the project originated from Karen Green, the Pest Control Manager, who initially envisioned placing a few beehives on the premises in Hitchin. However, preliminary research revealed a lack of food sources to support a larger bee population. This finding highlighted the urgent need for a broader initiative to promote pollinators and encourage the creation of a bee corridor across the district. The project aimed to involve the entire community—residents, businesses, schools, and groups—through activities like guerrilla planting, creating bee bombs and bee hotels, and other conservation efforts to foster a collective responsibility toward environmental stewardship.

To ensure the success of the "Bee Part Of It" fun day and the bee corridor, various resources were needed, including marketing materials, bee bombs, keyrings, pots, pens, clay, wildflower seeds, lavender plants, and a professional photographer. Many items were donated, and some are reusable for future events. The total cost of the initiative, which amounted to £3,500, was shared between John O'Conner and North Herts District Council.

The project has made significant strides in advancing sustainable development, boosting the local economy, and enhancing the environment. By establishing a bee corridor in Letchworth, the project has promoted biodiversity and supported vital pollinators. It has also had an economic impact, involving local businesses such as shops, pubs, and garden centres, which have incorporated bee-friendly plants into their spaces, attracting more visitors and fostering a sense of community pride. Environmentally, the project has improved green spaces, increased wildflower areas, and boosted local bee populations, contributing to the overall health of the ecosystem.

The "Bee Part Of It" fun day has greatly benefited the Letchworth community and the local environment. Supported by North Herts Council, the event brought together residents, businesses, schools, and community groups. Activities such as bee bomb making and storytelling encouraged community engagement, while resources and activities were provided by local gardens, the North Herts Beekeeping Association, and Culturewood. The initiative has strengthened community bonds, raised environmental awareness, and promoted


bee conservation, ensuring the sustainability and expansion of the project across North Herts.

The long-term benefits of the "Bee Part Of It" project are substantial. By fostering a sustainable ecosystem through the creation of a bee corridor and planting bee-friendly plants, the project has enhanced local biodiversity and provided food sources for pollinators throughout the year. The introduction of wildflower areas, bee hotels, and guerrilla planting activities has created diverse habitats that support the life cycles of bees and other pollinators, promoting their health and proliferation. Additionally, the project has raised environmental awareness among residents, businesses, and educational institutions. As a result, public spaces and private gardens have been beautified, contributing to a healthier local environment. The success of the initiative has also encouraged further expansion throughout North Herts, strengthening connectivity between towns and ensuring the continued growth of environmental benefits.

The "Bee Part Of It" project introduced several innovative elements to promote bee conservation and community engagement. By establishing the UK's first roundabout with bee-friendly plants and creating a bee corridor through Letchworth, the project set a unique precedent. Guerrilla planting with vibrant colors and interactive activities like making bee bombs, hotels, and watering stations at community events encouraged hands-on participation. The seed bomb color throw event creatively illustrated the impact on biodiversity. Collaborating with diverse groups, including local businesses, schools, and cultural contributors like "The Tree Man," the project combined education, entertainment, and environmental stewardship in an engaging and inclusive manner.

Other organisations and communities can benefit from adopting similar initiatives. By establishing a bee corridor and planting bee-friendly plants, they can enhance local biodiversity and support pollinators. Involving residents, businesses, schools, and community groups in activities

like guerrilla planting, creating bee hotels, and organising educational events fosters environmental stewardship and community engagement. Partnerships with local councils, educational institutions, and businesses ensure the sustainability and expansion of such projects. These initiatives not only provide ecological benefits but also stimulate local economies by beautifying areas and attracting more visitors.

From this initiative, we learned the immense value of community involvement and the positive impact of collaborative efforts on environmental conservation. Engaging diverse groups, from local businesses to educational institutions, significantly enhanced ecological health and community spirit. The active participation and positive response from the community demonstrated a strong readiness to support and sustain environmental projects. Looking ahead, we plan to expand the bee corridor throughout North Herts, as requested by the Council. This will include continuous planting of bee-friendly plants and increasing community engagement through educational events and partnerships, promoting greater connectivity between towns and ensuring a sustainable food supply for bees year-round.

In recognition of its efforts, the Letchworth Bee Corridor initiative won a Bee Friendly Award in May 2024. This award celebrates community efforts to transform unused spaces into pollinator-friendly habitats and promote positive environmental change.

# KALYON ENERJI YATIRIMLARI A.Ş

## SUSTAINABLE GREEN ENERGY

### INTRODUCTION

Sustainability is at the core of company mission and vision. The concept was integrated into the disclosed policies of the company. The innovative solutions and quality are also part of these policies. Sustainability management is represented at the Chief Sustainability Officer (CSO) level reporting directly to CEO. The CSO is the member of the Executive Board and Ethics and Compliance Board.

The Sustainability Department consists of Environment, Climate Change and Integrated Management System including biodiversity, Health and Safety, Social Impact and Inclusion, Quality Assurance and Quality Control. The Sustainability Department is actively involved in all current investment projects and operations of the company and works with full authority in direct decision-making processes. As of the end of 2023, our company is a signatory of the UN Global Compact and has become a member of the association.

Within the scope of our sustainability activities, national legislation aligned with EU Directives and international standards (such as IFC Performance Standards and EHS Guidelines) are followed in an integrated manner. KPIs are being tracked in compliance with these requirements and effectively monitored at the project level.

### IN DETAIL

Sustainability and innovation lie at the heart of Kalyon Enerji's daily operations. The company currently operates two solar power plants and has two solar and five wind power plants under construction in its pipeline. In 2022, Kalyon Enerji began ESG (Environmental, Social, and Governance) reporting, sharing its progress publicly. A significant achievement was the Development Impact Assessment study, conducted by JP Morgan Bank, which resulted in an impact certificate. This certificate highlighted the company's 1.35 GW solar power plant, which supplies clean energy to a city

of 2 million people and prevents approximately 1.7 million tonnes of carbon emissions annually. By the end of 2023, Kalyon Enerji proudly became a signatory of the UN Global Compact and a member of the association.

The company's sustainability efforts are firmly grounded in national legislation that aligns with EU Directives and international standards such as the IFC Performance Standards and EHS Guidelines. These are integrated into all operations. The Sustainability Department oversees the internal monitoring and reporting process, collecting monthly Key Performance Indicators (KPIs) from project sites, which are then published in the annual Sustainability/ESG Report. In addition, regular inspections, monitoring, and audits are conducted at project areas to ensure compliance. A pre-construction EHSS (Environment, Health & Safety, Social) site survey is performed before each project, and all new employees undergo sustainability awareness training. Moreover, to reduce fuel consumption and emissions, the company offers "Safe Driving" and "Sustainable Driving" training to facility personnel.

To further promote sustainability within the organisation, educational bulletins are regularly distributed. In 2023, 11 bulletins were shared to raise awareness. The company also conducts climate change risk assessments for its projects and power plants, incorporating different scenarios and national climate targets. Design changes for climate adaptation are seamlessly integrated into the projects. Greenhouse gas emissions are calculated for each project during both the construction and operational phases. For instance, Kalyon Enerji's 1.35 GW solar power plant earned 2.955.365 tons of CO2e carbon certifications in 2023. As projects enter their operational phases, the company ensures that the necessary ISO certifications are in place and that certification processes are completed successfully.

Biodiversity is another key area of focus. In the Karapınar Solar Power Plant, biodiversity studies conducted in 2021 and 2022 showed no plant species present before the project began. However, following the construction of fencing

and the removal of grazing pressure, a significant increase in plant life was observed. In the spring of 2023, 27 plant species were detected, and by 2024, the number had grown to 1,673 plants across 64 locations, all of which were protected with safety tape. The Karapınar Solar Power Plant has received several ISO certifications, including ISO 9001:2015 (Quality Management System), ISO 14001:2015 (Environmental Management System), ISO 45001:2018 (Occupational Health and Safety Management System), ISO 50001:2018 (Energy Management System), and ISO 27001:2022 (Information Security Management System).

Kalyon Enerji prioritises its employees' well-being by issuing employment contracts in accordance with both national and international labour laws, while also providing a Code of Conduct and private health insurance. The company supports employees' professional and personal development with training programmes, career planning, and regular satisfaction meetings. Additionally, an internal grievance mechanism has been set up, with an Appeals Committee, including senior management, to resolve issues raised by employees and external stakeholders.

As part of its commitment to the local community, Kalyon Enerji prepares Community Development and Livelihood Development Plans throughout the construction and operation phases of its investments, in line with SDG 8. In 2023, the company launched the "Grazing Under Solar Panels" project, designed to provide sustainable grazing opportunities for local sheep herders while addressing vegetation growth under solar panels. The project successfully implemented a continuous grazing program, with specific targets for the number of sheep grazed daily. The programme was piloted with 12,970 sheep.days and will be expanded to other solar plants in the future. In 2024, grazing activities continued, reaching a total of 31,200 sheep.days.

The Grazing Under Solar Panels Programme will continue to thrive, with more successful results anticipated each year. These efforts reflect Kalyon Enerji's ongoing commitment to sustainability, community engagement, and environmental protection, as the company strives to make a lasting impact through its green initiatives.

# LINXON

## LONDON POWER TUNNELS SF6 FREE GIS INSTALLATION

### INTRODUCTION

Hitachi Energy and Linxon have teamed up to enhance the London Power Tunnel (LPT), a critical power infrastructure project designed to ensure a reliable, clean electricity supply for England's capital city. In support of National Grid's efforts to accelerate its net-zero targets, Hitachi Energy will supply EconiQ™ 420-kilovolt (kV) gas-insulated switchgear (GIS) and gas-insulated lines (GIL), both of which are free from sulfur hexafluoride (SF6). This collaboration is not only focused on delivering a secure energy supply to London but also on minimising the environmental impact of the project.

Substations typically rely on SF6 as an insulation gas in switchgear, a substance that has a significant environmental footprint, with each kilogram of SF6 being equivalent to 23,000 kilograms of CO2e. By implementing this cutting-edge technology, which removes almost 100% of SF6's global warming potential, the project supports the transition to a Net Zero future while advancing sustainable energy solutions.

### IN DETAIL

The first and most significant way we are reducing our carbon emissions on substation construction projects is by reducing or removing SF6 or Sulfur hexafluoride during project design phases. SF6 is a man-made gas composed of one sulfur atom and six fluorine atoms, and it is commonly used in high-voltage switchgear as an effective insulator. It serves to protect and isolate electrical equipment during faults and is non-flammable and chemically stable, posing no risk of fire or explosion. However, SF6 is a potent greenhouse gas with an extremely high global warming potential. According to the European Environment Agency, just one kilogram of SF6 is equivalent to 23,500 kilograms of CO2.


To mitigate this environmental impact, we are working closely with our major stakeholder and parent company, Hitachi Energy, to offer clients alternative switchgear solutions. One such innovation is EconiQ, which utilises a low-carbon alternative gas that eliminates nearly 100% of SF6's global warming potential. Linxon is proud to be partnering with National Grid to install the first SF6-free substation in London. This new technology plays a crucial role in helping the UK achieve its net-zero targets, demonstrating our commitment to sustainable and responsible energy solutions.

# LONDON GREEN BRIDGE

## WALKS FOR UNITY

### INTRODUCTION


The London Green Bridge Environmental Initiative aims to bridge the environmental knowledge gap between the global north and south. Established in December 2021, it fosters international collaboration on environmental challenges. The project focuses on promoting green energy, sustainable development, and climate change mitigation. It includes activities such as tree planting, community awareness programmes, and educational workshops.

By integrating research, policy advocacy, and grassroots activism, the initiative strives to create a sustainable future through innovative and inclusive environmental solutions. Our comprehensive approach ensures the involvement of diverse communities and stakeholders in environmental conservation efforts.

### IN DETAIL

Community involvement is central to the London Green Bridge initiative. We engage local residents through workshops, tree planting events, and educational programmes, empowering them to take an active role in environmental conservation. Collaborations with schools, universities, and community groups ensure broad participation and the dissemination of green practices. Volunteer opportunities and partnerships with local businesses further integrate the community into our projects, fostering a collective effort toward sustainability. Regular community meetings and feedback sessions ensure that our initiatives align with the needs and values of the local population.

The London Green Bridge initiative stands out for its innovative approach to environmental challenges. By leveraging international collaborations, it introduces creative solutions tailored to diverse ecological contexts. Our projects integrate cutting-edge research with grassroots activism, ensuring practical and impactful outcomes. The use of digital platforms for knowledge sharing and community engagement exemplifies our commitment to innovation. Additionally, the initiative's focus on blending traditional conservation methods with modern technologies, such as renewable energy systems and sustainable urban planning, showcases our creativity in addressing complex environmental issues.

The London Green Bridge initiative commenced in December 2021 and is ongoing. Our long-term vision includes continuous community engagement, annual tree planting campaigns, and the expansion of international collaborations to sustain and enhance our environmental impact.

# MANCHESTER AIRPORT GROUP

## BIODIVERSITY ENHANCEMENTS & ENGAGEMENT

### INTRODUCTION

MAG are extremely happy to host healthy areas of ancient woodland and SSSI's. While these area of woodland is host to an exceptional diversity of functionally important plants including English bluebell, wild garlic and wood anemone, we are conscious that other, more recent woodlands within our grounds do not have these species present, nor are they likely to colonise naturally from the ancient woodland within any kind of reasonable timeframe. With the assistance of expert consultants, we have established a series of carefully planned methods to collect seed from these three target species alongside very small numbers of plants from the SSSI to assist their dispersal into one area of secondary woodland.

### IN DETAIL

The Ancient Woodland Indicator Translocation Project is a carefully planned initiative by MAG to boost biodiversity and ecological functionality on its grounds, particularly in areas that are not naturally hosting important species found in the ancient woodlands. The project's primary aim is to support the dispersal of key woodland species into secondary woodlands, which would not otherwise see these species colonise naturally within a reasonable timeframe. The decision to relocate plants and seeds from the ancient woodlands is backed by a deep understanding of the ecosystem's needs, with guidance from botanical specialists and support from Natural England.

The project's goals are threefold:

1. Promote Dispersion and Range Expansion – By introducing important woodland species into new areas, MAG aims to enhance the natural dispersal of these plants, thus expanding their range and ensuring they are

more widely distributed across the landscape.

2. Enhance Ecosystem Functionality – The translocation of these species helps improve the overall health and functioning of woodland ecosystems. By promoting a greater variety of plants, the ecosystems are better equipped to provide a wide array of ecological services, such as soil stabilisation and nutrient cycling.
3. Build Resilience and Futureproofing – The relocation effort ensures that key species, particularly those important for maintaining woodland biodiversity, will continue to thrive even in the face of changing environmental conditions.

In addition, we wanted to enable staff to be able to make their own impact on their local environment, by holding an environmental awareness week. "As part of the environmental awareness week, there were many activities, including:

- Giving staff and workers on site free wildflower seed (around 3,000 packets of seeds handed out).
- The senior leadership team, along with colleagues, made environmental commitments of how they will reduce or have a positive impact on the environment over the next year (and going forward)
- Supported the wildlife trust in supporting #30DaysWild - getting staff to get out in wildlife and holding completions at each site (with prizes for the best entries)

The main focus of the project was to sustainably harvest seeds and plants. This involved collaborating with botanical specialists and Natural England, ensuring that any gaps created during the process would naturally be repopulated within one to two years. The project aimed to disperse important woodland plants that would not naturally spread within a reasonable timeframe, ultimately enhancing the health and resilience of the woodland ecosystem.

From this project, MAG are looking at other projects where plants can be relocated to promote their growth, including a project with the local scouts group at Stansted Airport

Quote from the botanical expert -

"It was amazing to be involved in the Ancient Woodland Indicator

Translocation Project. I was approached by MAG, seeking the advice and support as a botanical specialist, to help them develop a project to relocate and spread the species from an ancient woodland to a nearby woodland. We collaborated with Natural England and MAG to ensure we had the right guidance and support for this initiative, carefully selecting plants to support populations and promote genetic diversity. The inspiration for this project came from a training day that I led earlier this year with MAG. Upon them learning about their slow dispersal and its impact on the spread of the species, I know the team at MAG were motivated to take action. Driven by MAGs desire to improve adjacent ecosystems, I worked with them to pursue a project involving the sustainable translocation of a small number of wild garlic, English bluebell, and wood anemone plants and seeds. I then advised MAG on sustainable translocation methods, explaining that the small gaps left from individually lifting the plants using hand tools would naturally fill in within the next year or so.

A key interest of mine is fostering resilient and healthy ecosystems, so it was fulfilling to complete this work, knowing we've directly contributed to improving local biodiversity and facilitating a wider and faster spread of these important woodland plants."

Martin Churley, Group Head of Environment & Sustainability said:

"I am proud that MAG supported World Environment Day across all our airports. While we all know how important the environment and biodiversity is every day, these events are a great opportunity for us all to stop and think about how every small action counts, and together, we can make a positive impact on our beautiful planet! Our biggest accomplishment of the week was translocating plants on our site at Manchester, which will not only help the current areas flourish, but will ensure adjacent forest are given every opportunity to develop. This will leave a legacy at the airport and deliver a change that will have a positive impact on future generations. We will also look to roll this out at other sites if the project is successful - and hope to share our knowledge with other UK airports outside of MAG."

# MICROBIO.WORLD

## MICROBIO.WORLD®

### INTRODUCTION

Human activity is recognised as harmful to the planet. Waste generation is immense and its control is expensive and extremely difficult. Industrial activity pollutes the air, the soil, and the water. Food production is harmful to the soil and requires much energy, a lot of precious water, artificial fertilisers, and poisons (pests control), that kill bees and other pollinators. Cities pollute rivers, release carbon, consume contaminated products, and generate waste that must be treated, processed, and transformed. All these are huge challenges.

Microbio.World® gives life to the soil, fertilises without chemicals, reduces environmental impact, and increases health, productivity, quality, and profits in agribusiness. It promotes greater biomass in crops, more efficient conversion of food, healthier foods, attracts pollinators, eliminates bad odors, and captures carbon. It is applied to water bioremediation, destroys chemical substances, mitigates the impact of heavy metals on the environment, and enhances sewage treatment and waste processing, converting them into beneficial bio assets.

### IN DETAIL

The planet's greatest asset is its microbiome, and in the world's forests lies its greatest reservoir, a source of incalculable, inestimable value. In fact, it is the world's only great reserve of health and life. From an economic perspective, it is the new

petroleum—renewable and a promoter of life. The greater the biodiversity of a forest, the greater the biodiversity of its microbiome, and the Brazilian Atlantic Rain Forest contains the greatest biodiversity on Earth. Microbio. World® is an extremely innovative venture with a high positive impact on the environment, through which we capture the microbiome of this magnificent forest and transpose it to improve human activities—through products of exceptional value.

Although it began with the discovery of a fantastic application in human health, it now encompasses nanobiotechnology for cleaning water and air, enriching soil life, treating effluents, eliminating toxic waste and chemical substances, mitigating pests and diseases in the fields and cities, increasing food production, promoting health, and enhancing feed conversion in livestock farming and fish farming. It also aims to improve life on the planet through other applications. Imagine a more organic, aromatic, less toxic, greener, healthier world for people, plants, animals, and businesses. It may seem like magic, but it is science, research, and biotechnology. Microbio. World® harnesses the power of forests, operating in both cities and the countryside—in the lives of all of us.

MbW Crop® | A low-cost, high-performance product for manual application in irrigation water, or for spraying crops with drones or agricultural aircraft. Depending on certain factors, it may temporarily or permanently correct soils.

MbW Prime® | A high-performance proprietary blend specially developed for bioremediation of gray water, black water, polluted water, odor control, and sewage treatment in various instruments and applications. In low concentrations, it exhibits bio-stimulating and bio-stabilising properties. In addition to being a powerful life promoter and suppressor of aerobic microbiota, MbW Prime® also has high degradation power over hemicellulose, nitrogenous compounds, biofilms, fatty acids, hydrocarbons, and carbohydrates.

MbW Acqua® | A low-cost, high-performance solid or liquid biological formula for greater productivity in fish and shrimp farming, hydroponics, rice planting, and other aquatic crops. It is a super fertiliser that restores the health and balance of the water microbiome, reduces harmful algae growth, and improves root health.

MbW Animal® | A liquid product developed for veterinary applications and livestock farming, to be added to food, drinking, and bathing water for all terrestrial animals. Diluted and sprayed on troughs, animals, and the environment, it reduces

oxidising microorganisms and unpleasant odors and minimises the presence of flies, cockroaches, and rodents.

MbW Base® | In addition to highly beneficial viable microorganisms that can be used in probiotic preparations for human or animal use, colonies grown in enriched nutrient broth produce many health-beneficial ingredients: growth factors, antioxidants, vitamins, stimulants, bacteriocins, antibiotics, short-chain fatty acids, and many others. These can be added to drinks or foods. MbW Base® is the ultrafiltrate of these cultures, which can be added to food supplements without the need for approval from health authorities, as it is an organic and 100% natural product, free from live bacteria or fungi.

Life-Matic® | An automatic brewer machine (under development) designed to expand a low-cost special line of probiotics for use at home or in corporations. It is a unique concept, with no similar machine on Earth.

# MILL GATE SHOPPING CENTRE

## ENERGY CONSUMPTION SAVING SCHEME

### INTRODUCTION


The project aimed to significantly enhance the energy efficiency of the Mill Gate Shopping Centre in Bury by replacing outdated LED lighting systems with advanced, energy-efficient models and integrating automatic sensors. These upgrades have yielded substantial benefits in terms of energy consumption, carbon emissions, and operational cost savings.

The primary goal was to reduce the energy usage of the property by replacing first-generation LED lighting with more efficient, modern LED systems. The project also included the installation of automatic sensors that adjust lighting levels based on presence detection, ensuring areas are illuminated only when needed. These measures were designed to reduce both the energy footprint and the overall operational costs of the shopping centre while simultaneously cutting down on its carbon emissions.

### IN DETAIL

Since the project's initiation in 2016, the shopping centre has achieved significant energy and cost reductions:

- Energy savings: The property now uses 51.66% less energy annually, resulting in a substantial decrease in overall energy demand.
- CO2 savings: A total reduction of 95.3 tonnes of CO2 emissions has been achieved, contributing to the fight against climate change.
- Cost savings: Over the past seven years, the centre has saved £23,060.27 in operational costs, based on the prevailing energy rates.

In total, the property has saved 409,117 units of electricity since 2016, further illustrating the success of these upgrades.

**What the Project Involved**

The Mill Gate Shopping Centre, which spans 450,000 square feet in Bury town centre, underwent a comprehensive energy management overhaul. This seven-year project involved continuous monitoring and improvements to energy consumption across the estate. Key initiatives included the removal of unnecessary lighting systems (such as decorative or festoon lights) and the replacement of outdated LED technology with the latest energy-efficient models. These new systems were equipped with microwave presence detection sensors, photocells, and timers, ensuring that lighting is only activated when required.


**Benefits of the Project**

From a business perspective, the reduction in energy consumption and maintenance costs translates directly into financial savings. These savings have been passed on to tenants in the form of reduced service charges, which in turn lowers their operational costs and improves their overall trading viability.

The reduction in CO2 emissions also plays a significant role in mitigating climate change by lessening the shopping centre's environmental impact. By consuming less energy derived from finite resources like gas, coal, and oil, the centre is helping to preserve natural resources for future generations.

In addition to energy and cost savings, the use of longer-lasting LED technology reduces maintenance requirements, allowing more time to be dedicated to other aspects of property management. Furthermore, the fixed energy tariffs based on lower consumption ensure that the shopping centre is shielded from potential future increases in energy costs, providing long-term financial stability.

Overall, this project not only demonstrates a successful energy management strategy but also contributes positively to both the environment and the financial well-being of the Mill Gate Shopping Centre and its occupants.

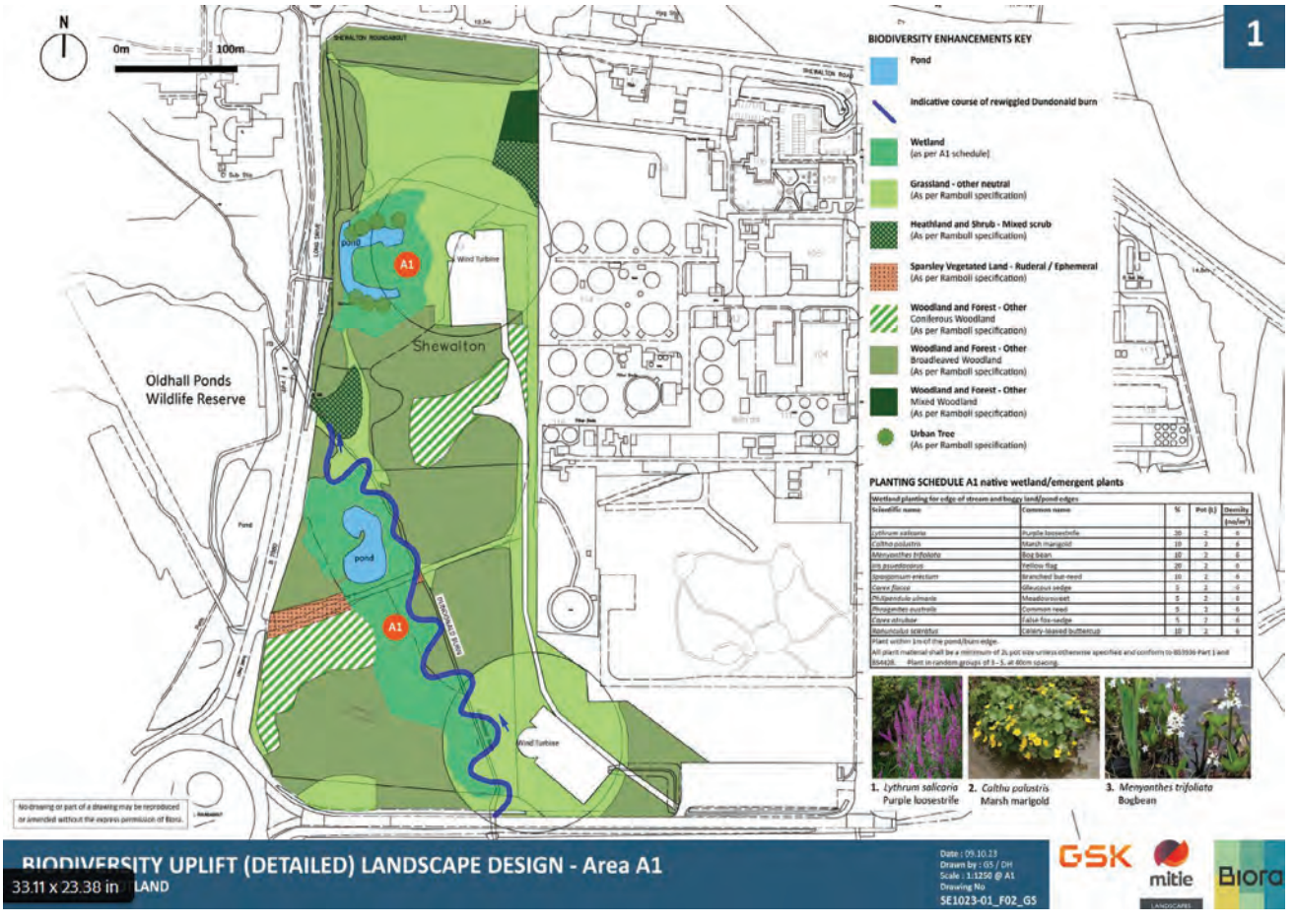
# MITIE LANDSCAPES

## SPACE FOR NATURE - BIODIVERSE LANDSCAPE TRANSFORMATION PROJECT

### INTRODUCTION

GSK set out with the ambitious goal of voluntarily increasing biodiversity by 20% across their UK production sites, each spanning several hectares. This initiative aimed to enhance the aesthetic appeal of their grounds while ensuring the uninterrupted production of high-grade medical products, maintaining the strict purity standards required for ingredients. Avoiding contamination during production was a key constraint, which influenced the types of habitats that could be developed and the methods for their implementation. To achieve this, GSK partnered with Mitie and Biora, working collaboratively with the central GSK team and site teams to design customised landscape plans for five large sites.

The designs were carefully developed to incorporate a range of habitats that not only met GSK's biodiversity targets but also provided practical and aesthetic benefits. These included the creation of shingle beaches as nesting sites for the endangered little-ringed plover, the re-wiggling of watercourses to improve water management, and the transformation of amenity shrub beds into scrubland, an important UK habitat. The project also focused on sourcing key plants, such as woolly willow and disease-resistant strains of elm, and featured habitat components that supported locally




important wildlife, including the little-ringed plover.

In addition to these ecological improvements, the project emphasised educating and engaging GSK staff about the value of nature on their sites, ensuring all stakeholders felt included in the final design. Water management features, like bogs and ponds, were integrated to support native species and provide forage for invertebrates, birds, bats, and small mammals. By combining innovative designs that benefit both nature and people, GSK achieved their biodiversity goals while making a lasting, positive impact on the local environment.

## IN DETAIL

Working in a three-way partnership with GSK (our customer), Biora (our industry partner), we delivered a complete support and collaboration package to provide a detailed biodiverse landscape design, installation, and ongoing management service across all GSK's UK production sites. These sites stretch from the South Coast of England to the East Coast of Scotland. The goal was to create nature-positive improvements to established, mature landscapes originally designed for industrial use (unused space around manufacturing plants) and amenity use (around car parks and buildings) in large, busy industrial manufacturing complexes that are extremely sensitive to contamination from insects. This was no small achievement, but we rose to the challenge, resulting in designs that not only met the brief but exceeded expectations at no extra cost to our customer.

Each of the five very large UK manufacturing sites posed unique challenges, but also presented unique opportunities. For example, one site was suitable for little-ringed plover, a second for woolly willow, and a third for re-wiggling. The sites were large enough to incorporate a mosaic of habitats, albeit interspersed with buildings and infrastructure, which made the process both interesting and unusual. These habitats ranged from acid grassland and aquatic environments to deciduous woodland and native hedgerow.

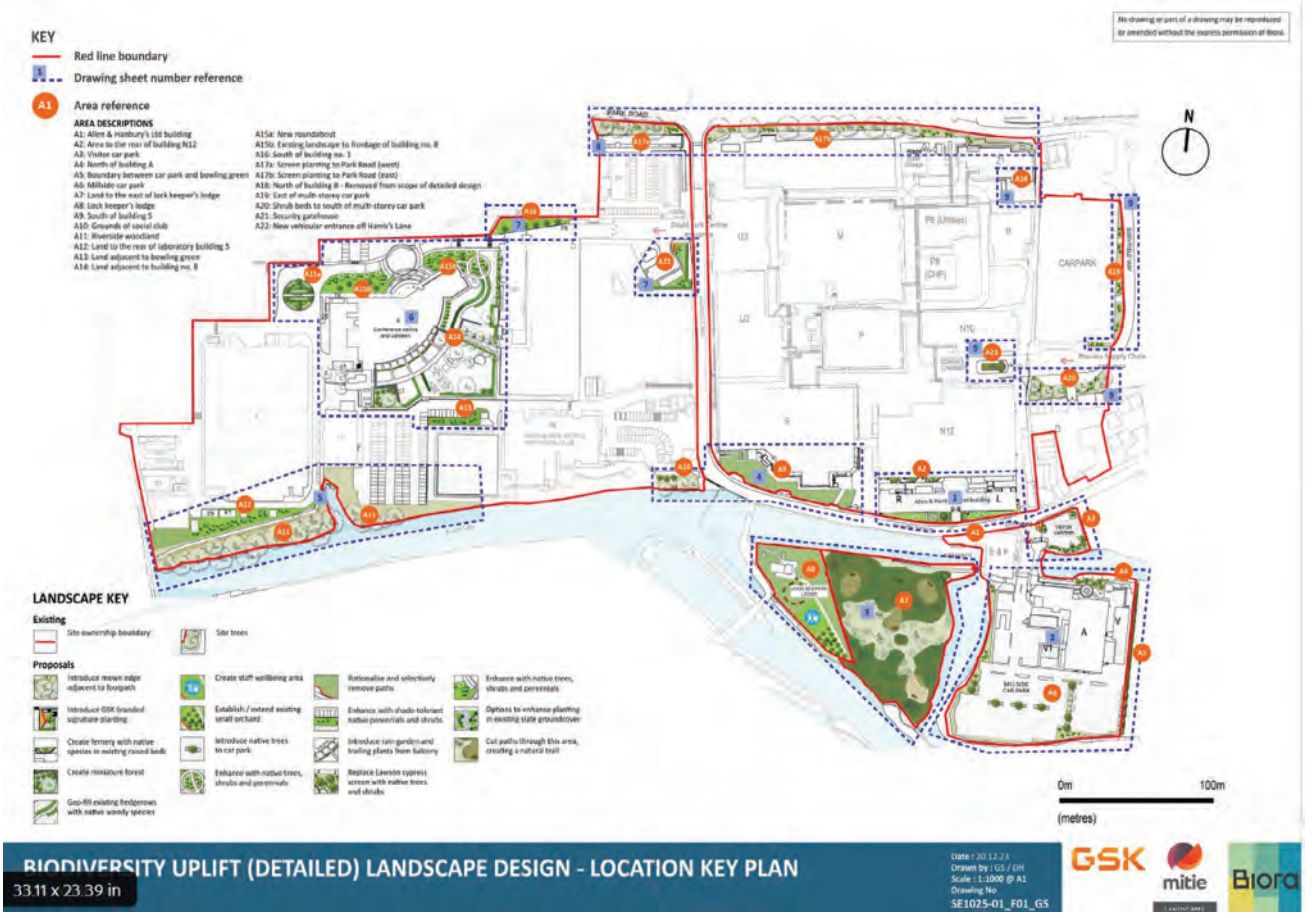
A particularly innovative approach we took was enhancing the low-biodiversity shrub beds while retaining their aesthetic value. We achieved this by removing a selected third of the low-value amenity shrubs and replacing them with important native scrub species that have aesthetic value in amenity settings, including broom, heather, and gorse. In this way, we were able to deliver a measurable increase in biodiversity, even in key entrance areas, by qualifying those areas as recognised UK habitat types—specifically Scrub—due to the proportion of native species used.

In larger, more remote areas of the site, we went into full-scale conservation design mode, re-wiggling rivers, creating large native perennial wildflower meadows, species-rich native hedgerows, and wetland scrapes—something the customer was really excited to progress. These final recommendations were made following a series of exhaustive collaboration meetings, which included sustainability site leads, the global biodiversity team, health and safety teams, and production leads. This thorough communication ensured every possible constraint to the design was addressed, and all teams were aligned with the final design, avoiding any potential mobilisation delays due to a lack of coordination within such a large and complex organisation.


Although designs were finalised in August and September 2023, our customer was eager to achieve a biodiversity uplift that year. This meant pricing the implementation of phase works, agreeing on those costs, mobilising, and completing the first phases before Christmas 2023. This was a huge ask, given the staff holiday season and Christmas leave. Despite this challenge, we nearly achieved this across all five sites, with snow being the only factor that pushed some work into the new year. Phase 1 installations and habitat enhancements are now progressing into Phase 2, which is planned for October 2024. Our customer has expressed satisfaction with the progress made on-site thus far.

The initiative to increase biodiversity by 20% is particularly enjoyable to work on because it is not tied to any financial gain (such as creating a biodiversity bank) nor any development (where BNG would be compulsory). Instead, our customer is investing in increasing biodiversity at a significant expense because it is the right thing to do. We are able to share this positive messaging with other customers to demonstrate the changing perspective on biodiversity within large commercial organisations, helping catalyse change elsewhere.

We continue to deliver this project in collaboration with our customer, with design phases completed in 2023, installation phases beginning in 2023/4, and Phase 2+ being delivered from 2024 onwards. Due to strict policies, photos are prohibited on any GSK site, and we are unable to submit before-and-after images. However, it is worth noting that no enforcement action has ever been taken against the organisation.



# MITIE WASTE & NETWORK RAIL

## MINI-MATERIALS RECYCLING FACILITY AT EUSTON STATION

### INTRODUCTION

Following the retention of the Network Rail account in June 2023, Mitie Waste was tasked with supporting their major hubs, starting with London Euston, to increase recycling levels, deliver cost savings, increase rebates, and support retailers within the stations to adopt more sustainable practices. London Euston station produces the most waste of any managed station in the UK, generating approximately 138 tonnes each month, with significant increases during seasonal periods such as Christmas.

Data obtained through Mitie's Waste Management Information system, WR1, was analysed, alongside waste composition analysis from controlled tips and bin dives. This analysis allowed Mitie to identify significant volumes of recyclables, including paper, cans, glass, and plastics, that were being included in the general waste stream and sent to incineration rather than being recycled.

The key to improving the situation was understanding the current composition of the general waste and dry mixed waste streams. This insight led to the crucial step of engaging with clients, onsite tenants, and retailers to raise awareness and educate them on correct disposal practices, ensuring waste was sorted in line with appropriate streams.

After the first four months of trial, waste costs had reduced by 50% compared to historical spending. Overall recycling performance at Euston Station increased from 10% to 81%, and collections decreased by 70%, resulting in carbon reduction due to fewer vehicle movements. General waste (GW) collections were reduced from five per week to just one, offering an annual carbon saving of 11,242.4 tonnes CO2e since the project's implementation.

### IN DETAIL

Following a detailed cost-benefit analysis, Mitie Waste recommended a trial of a modular mini–Materials Recycling Facility (mini-MRF) system at Euston station, which included additional resources to operate the system. This was agreed upon, and the project commenced in October 2023. The following process was initiated across Euston station: the Trackersack system was implemented across all retailers within the station. They were provided with barcoded bags that are then collected once full by Mitie operatives, who scan and weigh the bags. The waste type and weight are then allocated to that specific bag and retailer, enabling accurate charging for disposal and providing retailers with the ability to monitor their waste and recycling rates.

The waste from these bags is brought into the sorting station, where all liquids are removed and the waste is segregated by material type, such as card/paper, aluminium, plastic, and film. The segregated materials are then consolidated via compactors and balers. Collections are arranged, and the materials are transported directly to the on-site processing facility. Initially, 138 tonnes of waste were being collected from Euston, requiring 45 collections per month. After the first 4 months of the trial, waste costs had reduced by 50% compared to historical spending. This reduction was achieved by driving volume reductions in general waste, enabling the capture of saleable commodities such as cardboard, plastics, and cans. Additionally, liquid contamination was captured and safely managed.

Overall, recycling performance at Euston Station increased from 10% to 81%, and collections decreased by 70%, leading to a carbon reduction from fewer vehicle movements. General waste collections have decreased from 5 collections a week to 1, resulting in an annual carbon saving of 11,242.4 tonnes CO2e since the mini-MRF's implementation. Rebates are now being claimed for recycling goods that were previously sent to incinerators. For example, for each tonne of aluminium baled (approx. 1.5 bales), a rebate of £900 is claimed, which is reinvested back into the station to offset the costs of maintaining the mini-MRF. The end-of-year forecast shows a 74% reduction in costs, with zero waste to landfill being maintained throughout the process.

Next steps involve ongoing reviews to analyse the composition of the remaining waste, supporting retailers and contractors with strategies to reduce overall waste. Mitie will continue to work with retailers to understand the origins of their waste to further drive awareness and education around waste reduction, while also improving reuse and recycling rates. Additionally, Birmingham New Street has committed to the same investment and operation, providing end-to-end support for the Birmingham to Euston line. The next stages of the project will include the wider roll-out of the tracker-sack system, where barcoded bags are provided to retailers and weighed upon receipt within the resource management centre. This will facilitate a 'pay as you throw' system, with accurate billing based on weight and the cost of waste bags presented by each retailer.

# NEW TAIPEI CITY ENVIRONMENT PROTECTION DEPARTMENT

## CREATE A POWERFUL AND EFFICIENT ENVIRONMENTAL PROTECTION SYSTEM

### INTRODUCTION

Sheu has driven significant improvements in environmental management through a combination of technological innovation, effective leadership, and resource integration. Recognising the importance of efficiency, Sheu introduced technology to streamline operations, such as transforming the service command centre into a digital information system. This move reduced public nuisance complaints by 25%, while saving over NT$20 million annually and cutting carbon emissions by more than 30,000 kilograms per year.

In addition to technological advancements, Sheu founded and led the New Taipei Environmental Special Action Team, which has been instrumental in preventing environmental crimes. This specialised team, which integrated resources from various agencies, successfully addressed 268 major environmental crimes, ensuring that such offenses do not recur. One of the team's significant successes was its work on the Tamsui River, where, through collaborative efforts, the length of the severely-polluted sections of the river was halved, leading to a marked improvement in the river's ecological health.

Sheu's ability to innovate, collaborate, and lead has positioned New Taipei as a national model for effective environmental governance.

### IN DETAIL

Sheu has made significant strides in the field of environmental protection through the establishment and leadership of the New Taipei Environmental Special Action Team, pioneering innovative technological solutions, and collaborating across agencies for impactful environmental management.

**Establishment and Leadership of the New Taipei Environmental Special Action Team**

Sheu established the nation's first and only New Taipei Environmental Special Action Team, aimed at tackling pressing environmental crimes with efficiency and teamwork. This initiative brought together diverse groups such as prosecution, investigation, police, and environmental agencies. This collaborative approach allowed for better resource allocation, tailored to specific projects, and fostered a more dynamic, responsive structure. The team successfully processed 268 environmental crime cases over the past four years, removed 61 major pollution sources, and addressed 118 instances of illegal occupation of national land.

Under Sheu's leadership, the team embraced innovation in investigative tools and methods. Notably, they uncovered a nationwide case of electroplating wastewater discharge into sewers, which had caused severe pipeline corrosion and posed significant public safety risks. This discovery prompted the revision of sewage management regulations, ensuring more stringent standards for public and environmental safety. Additionally, the team's cross-regional efforts in tackling the illegal disposal of toxic substances led to the dismantling of criminal groups and the cleanup of hazardous chemicals, preventing further environmental damage.

**Advancement of Electronic Operations and Public Service Quality**

One of Sheu's major accomplishments was the establishment of the nation's first digital environmental command centre, which was a key initiative to modernise operations. By integrating the command centre with the 1999 public call system, traditional complaint handling processes were digitised, leading to the reduction of 40 staff members and annual savings of over NT$20 million. This shift not only reduced costs but also increased administrative efficiency by four times, while public complaints dropped by 25%, thanks to a more streamlined dispatch system that reduced manual transfers and paper use.

In addition, Sheu led the transition from paper-based permit applications to a fully online system. This move simplified application procedures and reduced the need for physical

documentation, saving millions of paper documents each year. Sheu also developed a comprehensive digital system for managing environmental debts in collaboration with other governmental agencies. This initiative greatly improved efficiency in debt management, reducing issues related to paper-based reconciliation and improving overall data accuracy.

**Collaborative Efforts in Tamsui River Rehabilitation**

Sheu's dedication to environmental preservation extends beyond urban spaces, particularly with his long-term involvement in the rehabilitation of the Tamsui River. For nearly 18 years, Sheu has worked towards improving the river's condition, which had been heavily polluted. Through the integration of cross-departmental resources and targeted environmental enhancement initiatives, the length of severely polluted sections of the Tamsui River was halved by 2022. The river, now in its cleanest state in 40 years, has seen a resurgence of biodiversity, evidenced by the return of species such as the mitten crab. This transformation not only highlights the success of the rehabilitation project but also demonstrates the ecological improvements achieved through dedicated efforts.

In conclusion, Sheu's innovative leadership in environmental protection, including the formation of the New Taipei Environmental Special Action Team, the advancement of electronic operations, and his collaborative efforts in the rehabilitation of the Tamsui River, has led to impressive results. These efforts have made a significant impact on reducing environmental crime, improving public service quality, and restoring vital ecosystems, ultimately contributing to a cleaner, safer, and more sustainable environment.

# OLLECO & NATIONAL TRUST

## PUTTING RURAL FOOD WASTE COLLECTIONS ON THE MAP FOR THE NATIONAL TRUST

### INTRODUCTION

The National Trust is custodian of many of the UK's most precious natural and historic environments. For millions of people, a trip to one of their cafés is an integral part of the visitor experience. This is why it's so important for the conservation charity to continually review its waste disposal processes to reduce the impact on the environment.

Milk waste, for example, presents a significant environmental challenge. Of the 16 million hot beverages served in National Trust cafés every year, many come with a jug of milk which is not always fully used. This creates a potentially problematic waste stream. Many people don't realise that milk and other dairy products are extremely harmful if disposed of down the drain because of the high Biochemical Oxygen Demand (BOD) of the bacteria that break it down. Because they use up dissolved oxygen that is essential for the survival of fish and other natural life in watercourses, the milk bacteria can suffocate entire aquatic ecosystems.

This problem is compounded for the National Trust because the places it cares for are often located in hard-to-reach rural locations with their own water treatment systems. The challenge is to ensure that employees understand the dangers of milk waste going down drains and find a waste contractor who can ensure the milk waste is safely processed to achieve the best environmental outcome.

Previous attempts to add dairy to waste collections have been unsatisfactory with unsuitable containers, volume limits, and leaking vehicles. Seeking a better solution, the Trust turned to Olleco. As one of the UK's leading food waste collectors, they had the coverage and expertise to ensure that the Trust's dairy waste is safely collected, stored,

and processed to minimise its environmental impact.


An innovative food waste collection fleet enabled them to service rural locations with minimal carbon emissions, and sophisticated routing technology allowed them to optimise mileage and respond to seasonal demand peaks. Olleco devised a service that tackled both the National Trust's food and dairy waste streams - guaranteeing both would be processed using anaerobic digestion. This delivers clear environmental benefits by diverting methane-generating waste from landfill and recovering the energy contained within the food and dairy waste to create renewable biogas and bio-fertiliser. It also stops milk pollution in aquatic ecosystems, enhancing biodiversity.

As of October 2024, 570 tonnes of this organic waste have been collected from National Trust premises. Food waste segregation has greatly improved the quality of other waste streams, and data arising from the food waste collections is informing waste reduction strategies across the National Trust's Food & Beverage operations.

## IN DETAIL

The objectives for the project were clear and focused on sustainability and minimising environmental impact. The key goals were:

- To ensure that all the milk and other food waste coming from the National Trust is handled in the safest and most hygienic way possible, with the least possible harm to the environment.
- To make National Trust catering employees fully aware of the environmental dangers of putting dairy waste down the drain through sinks or dishwashers and ensure that it is captured for separate collection.
- To remove the risk of any of the National Trust's dairy waste polluting aquatic environments.
- To roll out food waste collections, including dairy, across the whole National Trust Estate.
- To minimise the carbon impacts and financial costs of food waste to the Trust.
- To maximise the environmental benefit of processing food waste.
- To demonstrate best practice in resource management with zero waste to landfill.
- To reduce carbon impacts in line with the National Trust's goal of net-zero by 2030.

Olleco has answered all the National Trust's objectives - devising a service that tackles both their food and dairy waste streams in a single collection. This is a first, as liquid waste streams are usually separated from food waste and processed in general waste. This innovative approach guarantees that both waste streams are processed using anaerobic digestion (AD), diverting methane emissions from landfill and ensuring the energy contained within the waste is recovered as renewable biogas and bio-fertiliser.

Olleco and the National Trust took a partnership approach to the project. People working at every level went out of their way to understand the

constraints and issues facing both organisations and shared knowledge. This has facilitated strong working relationships where everyone is dedicated to finding the best possible solution and committed to a culture of continual improvement.

Olleco shared their extensive knowledge of food waste collection to help the Trust develop the signage and communications materials needed to inform and motivate their Food & Beverage teams to use the new collection service and stop milk from going down the drain. Olleco drivers worked with the teams on-site to answer questions, resolve any local issues, and collect feedback. The Trust's Food & Beverage (F&B) employees at the National Trust were educated on what organic materials could be composted onsite, avoiding the need for and cost of collection.

In line with the National Trust's ambition to reduce plastic, Olleco reduced the use of bin liners wherever possible by using innovative new collection vehicles that wash the bins on-site after they have been emptied rather than using plastic liners. The majority of dairy waste is absorbed by other food and plate waste. Where large volumes of liquid waste are generated, catering employees can reuse milk containers to hold the dairy waste, ready for de-packaging at AD plants.

Olleco collects and provides data on the quantities of food waste being generated at each premises to provide feedback to the National Trust. This helps management teams analyse waste and devise food waste reduction strategies to roll out across their estate, tackling individual hot spots. Olleco's trial contract was to service 15 National Trust properties. The success of this contract led to a further 140 properties being included, covering the vast majority of the National Trust's F&B sites, including some of its most hard-to-reach properties.

Environmental Benefits include 475 tonnes of food and dairy waste being collected from National Trust premises. This has saved 139 tonnes of CO2e by creating renewable biogas to replace fossil fuels


and by diverting methane emissions from landfill. Extensive and increasing use of Olleco's innovative biodiesel and gas-powered vehicles helps reduce the use of fossil fuels in providing food waste collections for National Trust properties. Olleco's varied fleet of food waste collection vehicles means that they can use smaller vehicles to service hard-to-reach properties accessed by narrow country lanes.

Olleco uses a highly sophisticated routing system that can be adjusted daily. This not only ensures that routes are always configured to maximise efficiency and minimise mileage but also allows collections to be configured to meet seasonal peaks in demand typically experienced by the National Trust. Olleco's existing food waste collections and processing network cover the whole of the UK. This means that National Trust food waste collections were easily integrated into existing local routes, and the distances from collection points to AD plants are minimised. The addition of National Trust properties to existing Olleco routes has increased route density, helping to make routing more efficient, further reducing CO2 emissions.

The removal of the risk of dairy waste entering drains on National Trust properties has reduced the risk of fines and sewer blockages and protects the integrity of private water treatment systems and surrounding watercourses. Data provided by Olleco, relating to food waste volumes arising at each site, has empowered the National Trust's F&B managers to look at greater efficiencies and identify areas of concern where savings can be made. WRAP currently estimates that the Hospitality and Food sector could save up to £3 billion per year by reducing food waste.

Olleco and the National Trust F&B plan to roll out food and dairy waste collection services to all the Trust's remaining F&B sites across England and Wales. Olleco's specialist ability to deal effectively with these specific waste streams with a single collection service puts them in a unique position to offer new standards of best practice to other visitor attractions and hospitality and food service businesses across England, Scotland, and Wales. This level of service is likely to see increasing demand as legislation places greater emphasis on the segregation of food waste for larger organisations.

# PARC TROSTRE RETAIL PARK

## 'ENCOURAGING WILDLIFE THROUGH NATURE & SUSTAINABILITY' INITIATIVE 2023

### INTRODUCTION

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 &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 2024 initiative is to further develop/ enhance our contribution to nature and bring more wildlife to the park, such as birds, bees, bats, hedgehogs and other insects to engage with our local community / customers in becoming more proactive in how they can support the natural environment.

### IN DETAIL

Our role is not just about what we can achieve in protecting and promoting wildlife; it is also about inspiring others to enjoy and contribute locally. In 2021, 2022, and 2023, we were honoured with Green Apple awards for our projects, and in 2024, we continue to evolve. We are creating more wildlife habitats and food areas that can be used year-round, all while incorporating recycled products.

Our previous initiatives have included the installation of a rainwater harvesting tank, allowing us to capture and store rainwater for use in our landscaped and natural areas. We have also introduced cycle shelters and EV bays. As part of our ongoing growth,


we continue to introduce new plant and wildflower areas, attracting more birds, butterflies, and bees. We have added a mix of natural and manmade bird boxes, bug and bee hotels, and in 2022, we introduced bat and hedgehog housing into our wooded areas. We also strategically plant food sources throughout the park to support insects.

Our goal is to encourage more species by providing year-round habitats and food through the variety of flowers we have planted. In 2024, we are introducing a new butterfly-friendly area filled with nectar-producing plants, such as Buddleia, Bottlebush, and Bee Orchids.

Set across twenty-two acres, our site includes approximately 6 acres of landscaped, wooded, and natural areas. Our dedicated site team takes great care in cultivating planted stock, tending to native flora and ground cover, as well as managing the grass cutting. We are now saving our own cuttings to produce additional plants. Used coffee grounds, generously donated by one of our tenants, are used as fertiliser in our compost bin made from reclaimed wood sourced from tree felling around the park.

To further our environmental efforts, in 2024 we introduced green cleaning products to reduce environmental runoff into landscaped areas. This change not only supports the environment but also helps us reduce stockholding and costs, with savings of approximately 15% in the first year, and a projected 20-25% in the second year.

Our retail park is home to a variety of wildflowers and plants, including bee-loving species like Butterfly Bush, California Lilac, Cotoneaster, and Red Claws, as well as a selection of lavenders, flowering shrubs, heathers, and native trees. In line with our commitment to community engagement, we will be launching our fourth Nature Photographic Competition in July 2024 through our social media platforms. The competition, with prizes donated by tenants and local community organisations like the local wetlands centre, aims to celebrate the beautiful local scenery and wildlife, encouraging everyone to support and care for the environment around us.

We also share links to local nature walks and parks on our social media to inspire both our customers and the wider community to get outside and explore nature. We support this initiative with scavenger hunts and blogs to further engage our audience.

At Parc Trostre, our team is passionate about continuing to seek new ideas that will foster growth

and development in this area. The dialogue we have instigated with our shoppers and local stakeholders speaks to the collective commitment of the entire team. We all share the desire to celebrate and protect the environment right on our doorstep, while still running a thriving commercial shopping park.

Our environmental programme continues to evolve. We have installed additional cycle shelters and partnered with the local council and community to further develop cycle tracks in Llanelli, encouraging greener transportation alternatives and helping reduce the carbon footprint of fossil fuel usage. We have also installed twin electric vehicle charging points to help reduce carbon emissions, supporting local efforts to combat climate change, improve public health, and preserve the local natural environment.

Looking to the future, we remain committed to expanding our wildflower areas, encouraging wildlife, and evaluating the performance of our rainwater harvesting system and switch to greener products. We believe that utilising natural rainwater and green alternatives will bring financial benefits to both the environment and our tenants. We are also excited to partner with local schools to encourage students to grow plants at home, further connecting the community to nature.

In conclusion, our ongoing objective is to find new ways to be greener, more environmentally focused, and to engage with our customers and local communities on this journey. Together, we can have a positive impact on our shared local environment. Our tenants and service providers have joined us in these efforts, and we are proud of what we have achieved since 2021. We look forward to the future and the exciting plans we have for the park. By working together, we can continue to facilitate change, and we are determined to inspire others to join us on this meaningful journey.

# PARC TROSTRE RETAIL PARK

Encouraging Wildlife Through Nature since 2021

## Opening Times

Mon - Sat 8am - 8pm

Sunday 11am -5am

Parc Trostre Retail Park
Trostre Road
Llanelli
SA14 9UY
Telephone: 01554 775344

# PT KILANG PERTAMINA INTERNASIONAL RU V BALIKPAPAN

## EKOKILANG GREEN FOOTPRINT IN CHANGE

### INTRODUCTION

The EKOKILANG Program, spearheaded by PT KPI RU V Balikpapan, exemplifies how industrial operations can harmonise with nature to mitigate environmental impacts, especially with the planned increase in production capacity from 260 MBSD (Million Barrels per Stream Day) to 360 MBSD by 2025. The initiatives involve employees, contractors, stakeholders, and the local community in tree planting and maintenance activities, fostering collective environmental responsibility. The program's primary objectives include expanding green open spaces, enhancing carbon sequestration, and empowering local communities to improve their welfare through the increase of green spaces.

EKOKILANG contributes to urban beautification, provides recreational areas, and helps offset the company's carbon emissions. Community empowerment is another critical goal, as local residents are actively involved in conservation efforts, leading to sustainable socio-economic improvements. The programme also prioritises biodiversity by protecting and restoring habitats for flora and fauna that are near extinction or vulnerable. This focus on biodiversity ensures ecological balance and resilience against environmental changes.

The EKOKILANG programme has achieved various significant milestones. In 2024, PT Kilang Pertamina Internasional RU V Balikpapan successfully expanded its green open space area by 104.08 hectares through the planting of 10,408 trees. These trees have the capacity to absorb 173,069 tons of CO2eq, with an estimated reduction in global warming impact of 0.0044°C. In the face of global warming, this programme succeeded in increasing its green open space by 11% from 2022 to 2024, including the protection of three new plant species with protected status.

In terms of community empowerment, the programme provided benefits to communities around Balikpapan City amounting to Rp 2,081,600,000, or approximately £99,439. The programme involves all sectors, fostering a sense of environmental responsibility and collaboration with the government and non-government organisations. The achievement of the EKOKILANG program's goals demonstrates that industry can collaborate with nature and contribute to reducing the effects of global warming through the implementation of sustainable green systems.

## IN DETAIL

PT Kilang Pertamina Internasional RU V Balikpapan is the biggest oil refinery in Indonesia, with a capacity of 260 MBSD that will increase to 360 MBSD in 2025. PT Kilang Pertamina Internasional RU V Balikpapan recognises the potential impacts due to the increasing amount of production and the urgent need to combat global warming. The EKOKILANG Programme – Green Footprint for Change reflects the green commitment of environmental management. The initiative empowers workers, contractors, stakeholders, and the local community for planting and maintenance activities that increase green space, contribute to the prevention of global warming, and enhance carbon sequestration through a massive movement to raise environmental awareness. This project is strategically located near the new capital city, which implements a green city system.

The EKOKILANG programme is developed to address the environmental impacts caused by challenges in renewable energy demands. This issue presents an innovation in empowering employees, contractors, and stakeholders in tree planting and caring. The EKOKILANG programme involves all levels, including management, workers, and contractors, in providing and maintaining local tree species that store a high amount of carbon and have endangered (EN), vulnerable (VU), and other protected statuses. The trees, which meet the classification requirements of being at least 1.5 meters tall, will be auctioned to stakeholders and local community members. The winning bidders will be responsible for planting and caring for these trees, fostering a sense of responsibility for the planted trees and the surrounding environment.

In 2024, this programme successfully expanded green space by 104.08 hectares through the planting of 10,408 trees. Each tree serves as a carbon sink and is capable of absorbing CO2, depending on the species planted.

This programme empowers local community members in Balikpapan city in terms of economic development, with RU V collaborating with stakeholders. From 2022 to 2024, a total of 10,408 plant seedlings were provided, with an estimated price of Rp 200,000 (equivalent to £3.57) per seedling. This resulted in a total benefit for the local community of approximately Rp 2,081,600,000 (equivalent to £99,439).

This programme plays a special role in mitigating global warming by providing CO2 absorption, which is one of the main greenhouse gases responsible for climate change. The 10,408 trees planted will absorb 173,069 tons of CO2eq, and the estimated reduction in global warming impact is 0.0044°C. Although the results may seem small, this programme has achieved other significant outcomes, such as increased biodiversity and species enhancement. Additionally, the programme supports the government's agenda for implementing green city initiatives.

The effectiveness of this programme is evident from the significant increase in the biodiversity index

from 2022 to 2024, rising by 11%. The variety of tree species planted has increased by 3 species from 2022 to 2024. Collaboration on environmental knowledge and sustainability efforts has been ongoing since 2022 and continues today. Regular evaluation and monitoring involve stakeholders, such as the government and non-government organisations in Balikpapan City, to ensure that all groups are actively involved in this program.

The EKOKILANG programme demonstrates how industrial operations can synergise with nature and contribute to reducing global warming in the face of climate change. PT KPI RU V Balikpapan is dedicated to environmental management and community involvement in tree planting to mitigate environmental impacts and support the government's programme for implementing the green city concept. The EKOKILANG programme has achieved various significant milestones. In 2024, PT Kilang Pertamina Internasional RU V Balikpapan successfully expanded its green open space area by 104.08 hectares through the planting of 10,408 trees. These trees have the capacity to absorb 173,069 tons of CO2eq, with an estimated reduction in global warming impact of 0.0044°C. In the face of global warming, this programme succeeded in increasing biodiversity by 11% from 2022 to 2024, including the protection of three new plant species with protected status. In terms of community empowerment, the programme provided benefits to communities around Balikpapan City, amounting to Rp 2,081,600,000, or equivalent to £99,439. This programme involves all sectors in fostering a sense of environmental responsibility and collaboration with the government and non-government organisations. The achievement of the EKOKILANG program's goals demonstrates that industry can collaborate with nature and contribute to reducing the effects of global warming through the implementation of sustainable green systems.

# QATAR MUSEUMS

## FIRST EVER MUSEUM IN MIDDLE EAST ACHIEVING CARBON NEUTRAL CERTIFICATION

### INTRODUCTION

Qatar Museums (QM), a leading institution for art and culture, fosters a vibrant cultural landscape through its expansive network of museums, heritage sites, and educational programmes. Under the esteemed leadership of His Highness the Amir, Sheikh Tamim bin Hamad Al Thani, and Her Excellency Sheikha Al Mayassa Bint Hamad bin Khalifa Al Thani, QM has positioned Qatar as a cultural and educational hub for the Middle East and beyond. Established in 2005, QM has led the development of prestigious institutions such as the Museum of Islamic Art, Mathaf: Arab Museum of Modern Art, and the National Museum of Qatar (NMOQ). Future projects include Dadu, the Children's Museum of Qatar, and the Lusail Museum, solidifying QM's dedication to enriching the cultural tapestry of the region.

The National Museum of Qatar (NMOQ) stands as a testament to Qatari heritage, employing innovative and immersive storytelling to captivate visitors of all ages. Intergenerational learning lies at the heart of NMOQ's mission, fostered by interactive exhibits, thematic narratives, and engaging programmes. A cornerstone of the museum's permanent collection is a comprehensive digital archive, offering unparalleled access to Qatari history and culture for a global audience. Beyond Exhibitions, NMOQ transcends its role as a museum, becoming a vibrant space for diverse communities. It serves as a platform for cultural dialogue, encouraging visitors to explore Qatar's rich past, dynamic present, and promising future. Nestled on Doha's Corniche, NMOQ's architectural marvel, inspired by the desert rose, unfolds before visitors. Designed by the visionary Jean Nouvel, the museum's exterior features interlocking discs reminiscent of the natural crystal formations found in the region.

### IN DETAIL

At the National Museum of Qatar (NMOQ), sustainability is a core principle integrated throughout its design and operations. Solar panels at NMOQ serve a dual purpose as car parking shades, harnessing the sun's energy to provide shade while generating clean electricity. The lagoon uses seawater, saving 17,500 cu.m of potable water annually. 50% of building materials are recycled, and 98% of construction waste is diverted from landfills. NMOQ achieved a 4-Star rating under the Global Sustainability Assessment System (GSAS), the MENA region's first performance-based green certification system. It also achieved LEED-GOLD certification under LEED BD+C green building rating system. NMOQ's ongoing commitment to sustainability extends beyond construction. The museum's operations have been

awarded the esteemed GSAS (Gulf Sustainability Assessment System) Operations - Gold certification, further solidifying its dedication to environmentally responsible practices. These are just a few of the numerous sustainability initiatives implemented at NMOQ. From the initial planning stages to ongoing operations, NMOQ champions responsible practices, serving as a model for cultural institutions worldwide.

NMOQ's groundbreaking achievements extend beyond its walls. The museum fosters knowledge exchange through workshops and conferences, enabling other institutions to replicate its success and advance sustainable practices within the cultural sector. The National Museum of Qatar (NMOQ) stands as a powerful symbol of cultural heritage and environmental responsibility. By embracing innovative design, pioneering sustainable practices, and fostering a culture of environmental awareness, NMOQ paves the way for a greener future.

The museum's breathtaking architecture, inspired by the desert rose, a natural crystal formation found in arid climates, isn't merely an aesthetic choice. It's a symbolic homage to the resilience of nature and a testament to NMOQ's deep respect for the environment. The interlocking discs not only mimic the desert rose's beauty but also strategically cast shade, reducing cooling needs – a powerful manifestation of how nature's wisdom can inspire innovative design solutions. This thoughtful approach exemplifies NMOQ's dedication to harmonising cultural preservation with environmental responsibility.

NMOQ's brilliance lies in its masterful execution of a low-carbon energy strategy. The building's facade, a marvel of modern architecture, is clad with high-performance glazing for natural light penetration while remaining meticulously insulated for minimal energy use. The interlocking discs of the National Museum of Qatar provide shading, which substantially reduces indoor cooling needs. Additionally, the light colors of its façade mimic the natural sandy landscape, thereby reducing the urban heat island effect. CO2 sensors work in harmony with the system, adjusting fresh air based on occupancy levels. Sophisticated heat recovery units capture outgoing cool air and pre-cool incoming warm air, further minimising energy demands. NMOQ utilises underfloor displacement ventilation, introducing fresh air low where visitors and exhibits reside, requiring less energy for cooling the upper levels.

NMOQ's commitment to sustainability extends beyond the building's operations. During construction, 20% of building materials were sourced regionally, minimising transportation emissions. A remarkable 50% of materials, from concrete mix to gypsum board, were derived from recycled sources, demonstrating a commitment to responsible resource management. The steel forming the museum's structure boasts 25% recycled content and is itself recyclable, ensuring a sustainable life cycle.

NMOQ champions sustainable transportation options. Dedicated bicycle tracks and pedestrian walkways encourage exploration on foot or by bike. The museum's location offers easy access to metro stations and bus stops, promoting mass transit as

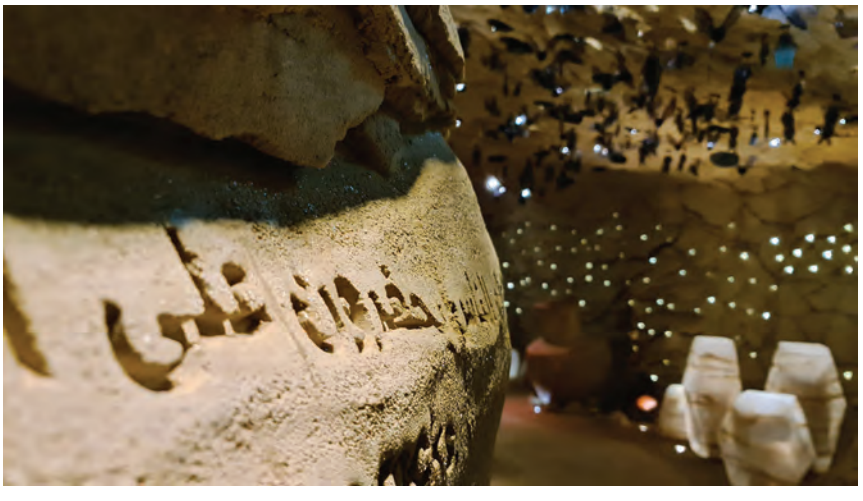

a low-carbon alternative. Additionally, designated parking spaces prioritise eco-friendly vehicles, further reducing the museum's environmental footprint. NMOQ recognises that sustainable urban design plays a crucial role in mitigating climate change.

The museum's meticulously chosen landscaping reflects the region's arid climate. Native flora, like pomegranate trees, date palms, fragrant herbs, and Qatar's national Sidra tree, not only require minimal water but also create a living tapestry that complements the museum's geographical context. A dedicated botanical garden showcases the beauty and resilience of these native plants. Plants grown for NMOQ's landscaping match the regional dry climate. Hence, they require minimal hydration and result in water conservation.

NMOQ employs a state-of-the-art drip irrigation system throughout the landscape. This targeted approach delivers water directly to plant roots, minimising evaporation and eliminating water waste. Notably, the water used in the drip irrigation system is treated and reclaimed from other uses, further maximising resource efficiency. The urban heat island effect describes the phenomenon of elevated temperatures in urban areas compared to rural landscapes. NMOQ combats this by employing light-colored facades that mimic natural surfaces. The museum's iconic interlocking discs, inspired by the desert rose, reflect sunlight, reducing heat absorption and minimising the need for energy-intensive cooling systems.

Beyond the carefully designed landscape, NMOQ's ingenuity extends to stormwater management. A strategically placed lagoon collects rainwater from rooftops and impermeable surfaces. This 17,500 cubic meter lagoon acts as a natural reservoir, storing water and mitigating the risk of flooding. The captured water is then cleverly repurposed for secondary uses within the museum. The lagoon created outside the National Museum of Qatar stores stormwater, which can be repurposed for secondary use. Furthermore, NMOQ utilises low-flow sanitary fittings in restrooms and kitchens, achieving a remarkable 32% reduction in water consumption. Innovative cooling towers further contribute to water savings, utilising 10% less water than traditional systems. Also, the cooling tower water requirements of the NMOQ facility are met by the treated (TSE) water, which avoids the use of over 30 kiloliters (approx.) of potable water a month.

NMOQ prioritises the well-being of visitors and staff by utilising low-VOC (Volatile Organic Compound) materials throughout the museum. Adhesives, paints, sealants, carpets, and wood products are meticulously chosen for minimal VOC content, ensuring a healthy indoor environment. Furthermore, advanced filtration systems continuously cleanse the air, removing contaminants and creating a comfortable and healthy atmosphere.



NMOQ's construction process adhered to rigorous environmental standards. A staggering 98% of construction waste, totaling approximately 58,350 tons, was diverted from landfills through recycling and reuse. A comprehensive site waste management plan ensured proper waste segregation before transportation to material recovery facilities. Sedimentation and erosion control plans further

minimised environmental impact during construction. These plans included measures like using gravel to cover temporary pathways, controlling dust, and regularly washing vehicles before leaving the site.

NMOQ's commitment extends beyond its walls, fostering a culture of environmental awareness that empowers future generations. Qatar Museums' engaging program, Menthaar, offers the public, families, and children a unique opportunity to engage with sustainability initiatives. Through interactive tours, workshops, webinars, and talks, Menthaar participants delve into Qatar's rich heritage while gaining a deeper understanding of the importance of environmental stewardship. This program, accessible to Culture Pass Plus and Culture Pass Family members, ignites a passion for protecting the planet within families, inspiring them to become responsible citizens.

In addition to Menthaar, Qatar Museums offers year-round sustainability workshops for visitors of all ages. These creative workshops address crucial environmental issues, such as reducing plastic consumption and adopting eco-friendly practices. Participants learn practical tips on how to make a positive impact through simple changes in their daily lives. By encouraging a hands-on approach and fostering environmental awareness, NMOQ empowers visitors to become active agents of change.

NMOQ's unwavering commitment to sustainability is powerfully demonstrated by its numerous prestigious certifications. Remarkably, NMOQ stands alone as the only museum globally to achieve high sustainability certifications & awards from multiple assessment systems, a testament to its dedication from the very inception of its design. The accolades include the following: A coveted GSAS 4-Star rating for design and build certification, a GSAS Gold certification for sustainable operations, LEED Gold certification for building design and construction. NMOQ is also the sole MENA region museum to receive the prestigious Green Key certification from FEE, recognising its commitment to sustainable operations. Most remarkably, NMOQ has achieved carbon neutrality certification for the reporting period of April 2022 to March 2023. This groundbreaking accomplishment positions NMOQ as the second museum facility in the MENA region, following QM's Museum of Islamic Art, to achieve carbon neutrality.

The National Museum of Qatar (NMOQ) transcends its role as a museum, becoming a powerful symbol of cultural heritage and environmental responsibility. NMOQ's innovative design, commitment to responsible resource management, and dedication to sustainable operations serve as a blueprint for future cultural institutions. By fostering a culture of environmental awareness through its exhibits and educational programmes, NMOQ inspires visitors to adopt sustainable practices in their daily lives. NMOQ stands as a testament to the power of innovation and collaboration in achieving a greener future. Its dedication to sustainability positions NMOQ as a sustainability leader in the region.

# RECOFLOOR LTD

## RECOFLOOR: A SUSTAINABLE COLLECTION AND RECYCLING SERVICE FOR COMMERCIAL WASTE VINYL FLOORING ACROSS THE UK

### INTRODUCTION

PVC is used to make various types of vinyl flooring for the commercial and residential sectors and is a leading choice for education, healthcare, hospitality, and public buildings. When PVC reaches its end-of-life, it can be recycled up to seven times without any loss of performance. Recycled PVC can be reused in diverse new products, including windows, fascias, electrical components, new flooring, and traffic management products, thereby saving valuable resources across multiple sectors. Despite this, the commercial flooring industry lacked a simple and sustainable route for disposing of waste vinyl, with most waste going into landfill.

Change was initially initiated via a 2008 WRAP-funded pilot scheme, which brought together flooring manufacturers to explore how to increase waste vinyl collection and recycling in the commercial flooring industry. When the trial ended, two leading manufacturers – Altro and Polyflor – decided to collaborate by jointly funding the launch of Recofloor, a UK-wide collection and recycling service for commercial waste vinyl flooring. Recofloor provides an eco-friendly and cost-effective alternative to traditional waste disposal routes, helping the flooring industry and its partners to become more sustainable.

### IN DETAIL

When setting up Recofloor, we wanted to prove its viability. We knew PVC vinyl flooring was recyclable, but the real challenges were the logistics of UK-wide retrieval, identifying which sectors to engage with, and providing an easy-to-use service. Once we'd overcome these challenges, we started to grow


the scheme organically. Since then, members and volumes have been increasing annually. Today, we collect, on average, 500 tonnes per year, and this is our forecast target. It's important to note that Recofloor is the only scheme proven to contribute to vinyl flooring recycling, supporting a circular economy model by moving waste vinyl flooring up the waste hierarchy, ensuring it's either reused or recycled.

Altro and Polyflor create reusable flooring products. For example, MacGregor Flooring Company Ltd won a tender at Louisa Jordan Hospital in Glasgow, where they laid Polyflor Quicklay vinyl. They were later drafted back to lift the flooring. In total, they lifted around 12,300m² of product. Two thousand square meters were gifted to local charities within the Glasgow area, and the remaining 10,300m² was recycled via the Recofloor scheme. Collectors have two options: they can either bring their waste to a drop-off point free of charge or organise collections from their premises or project sites. With costs starting at £10 for premises collections, members can save up to 70% on disposal costs. The waste vinyl flooring is hand-sorted at Altro and

Polyflor's UK plants, either being recycled into new flooring or sent to a UK recycler to be used in traffic management products.

To achieve ongoing and significant impact, we engage with and secure the buy-in of the construction industry, including flooring distributors, contractors, architects, and specifiers, through an active marketing and communications plan based largely on explaining the challenge facing the construction industry and presenting a solution to waste vinyl flooring.

Our members benefit from accessing an eco-friendly and cost-effective alternative to traditional waste disposal routes. Westlinks, one of our members, says, "We're proud to be associated with Recofloor, and we actively recycle all our waste vinyl flooring, reducing the impact on the environment. We're also saving on our disposal costs. We'll continue with this policy and endeavor to return 100% good quality waste vinyl for eventual use in new products."

Members also set sustainability targets and boost industry sustainability efforts while collecting evidence as proof of their sustainability credentials for project tenders. For example, Recofloor plays an integral part in GRAHAM's environmental mission. "Construction waste reduction and the circular economy are key strands in GRAHAM's environmental mission. Building on existing successes in reducing waste to landfill, we've set a target of a 50% reduction in construction waste by 2030. Veitchi's use of the Recofloor vinyl take-back scheme is a great example of how supply chain support can help us reach that goal."

The construction and flooring industry benefits from Recofloor as it helps them achieve waste reduction targets, including reducing carbon emissions, as well as enabling them to be part of the solution to keeping resources within the circular economy. The Government is involved through ongoing conversations with Recofloor regarding sustainability within the industry and legislation to support the efforts being made. Society at large benefits from less waste going into landfill and the reduction of CO2 emissions.

# Environmental Best Practice
## Volume 29

Within the industry, Recofloor is acknowledged as the leading collection scheme for vinyl flooring. Recofloor members working towards achieving Net Zero targets recognise the importance of closed-loop processes and understand how Recofloor contributes towards their efforts. Kane Greenough, Supply Chain Sustainability Manager at Morgan Sindall Construction, comments on Recofloor, saying, "At Morgan Sindall Construction, our vision is to be the most sought-after and sustainable business in the industry, and our mantra is 'reuse what is reusable and recycle what is recyclable.' As a business that creates social value, we're committed to achieving Net Zero emissions by 2030. As such, we work towards identifying sustainable materials and resources as well as supporting and promoting eco-friendly waste management plans. There is a strong awareness within Morgan Sindall Construction that if we didn't work with Recofloor collecting and recycling valuable vinyl resources from our projects, it would most likely go for incineration, and the product would be lost forever. Recofloor is an important ally in the sustainability work we're doing, and I believe it will become even more so as the push to do the right thing for the environment gains more traction across the construction industry."

From the lessons we've learned, we emphasise keeping things simple, keeping them cost-effective, and communicating effectively. We strive to make it a win-win for everyone involved, and we record member collection volumes, feeding data back to support waste targets.

Looking ahead, we're exploring how we can further promote the reuse of vinyl, aiming for no further processing, which is involved if we recycle. We're also currently working on a whole supply chain relationship where we promote the specification of the scheme, securing wider usage of our collection sites.

Recofloor is a multi-award-winning initiative, having received numerous accolades, including the CIWM Award for Innovative Practice (SME) in 2010, the BCE Award for Environmental Leadership in 2012, and the Green Apple Environmental Best Practice Gold Award in 2013. In 2024, it received the Better Society Award for Circular Economy and was Highly Commended in the Awards for Excellence in Recycling & Waste Management, Contribution to Tackling Net-Zero.

# REFEX INDUSTRIES LIMITED

## COAL ASH MANAGEMENT

### INTRODUCTION

Coal ash generated from burning coal in thermal power plants includes several by-products such as Fly Ash, Bottom Ash, Boiler Slag, and Flue Gas Desulfurisation Material. If not handled properly, coal ash ends up in unauthorised disposal sites like agricultural land, rivers, and ocean beds, causing irreversible environmental damage to air, water, and land. This includes air pollution, land contamination, degradation of arable soil, water contamination, loss of aquatic biodiversity, increased landfill areas, and pressure on land availability for agriculture and settlement.

Additionally, coal ash contains hazardous elements like lead, arsenic, mercury, cadmium and zinc, posing serious health risks to humans and other organisms. Refex Industries Limited's Coal Ash Management service is the only organised sector in India providing end-to-end coal ash management. Our comprehensive project aims to maximise environmental benefits through the rehabilitation of abandoned mines by backfilling, using coal ash in cement production, as a cement replacement material in concrete batching, block and paver manufacturing, and in road construction as fill material.

These initiatives ensure environmental protection, reduce carbon emissions, conserve natural resources, and decrease the demand for virgin materials, contributing significantly to sustainable development and environmental stewardship. In the last two financial years, Refex Industries handled 8,844,996 MT of coal ash and diverted this industrial


solid waste from unauthorised landfills, preventing land and water contamination, and saving the equivalent amount of virgin raw materials.

During this period, 3,535,431 MT of fly ash was facilitated by the company to be utilised in Portland Pozzolana Cement (PPC) manufacturing. This reduced CO2 emissions by 165 kg per ton of PPC cement, resulting in a total reduction of 583,343 tons of eCO2 emissions. As 3,535,431 MT of fly ash was utilised in PPC, this directly resulted in the conservation of the same amount of virgin raw material.

Also, this amount of PPC with fly ash, when utilised in concrete production, led to significant water savings as the use of PPC cement in concrete production reduces water demand by 10%, according to the Federal Highway Administration, USA.

Coming to land rehabilitation, in the state of Chhattisgarh, India, Refex Industries rehabilitated approximately 71 hectares of abandoned mines and degraded lowlands, covering 27 degraded sites through the environmentally friendly method of backfilling with coal ash. This effort created stable, usable land and reduced pressure on agricultural and forest lands for urbanisation demands.

## IN DETAIL

Indian coal-fired thermal power plants (TPP) generate an average of 200 million metric tons of ash annually, and this figure has been steadily increasing every year. If coal ash is not handled properly, it ends up in unauthorised disposal sites such as agricultural land, rivers, and ocean beds, causing irreversible environmental damage to air, water, and land. This leads to pollution, land contamination, degradation of arable soil, water contamination, loss

of aquatic biodiversity, increased landfill areas, and pressure on the availability of land for agriculture and settlement. Additionally, coal ash contains traces of hazardous elements, posing a serious threat to the health and well-being of humans and other organisms.

Refex Industries Limited (RIL) entered the coal ash handling service in 2018 through its Coal Ash Management Division (Project). Since then, the company has managed coal ash across various states in India using eco-friendly disposal and recycling methods, in compliance with pollution control board norms and guidelines. Refex Industries has established a strong business network comprising cement manufacturers, brick and block manufacturers, abandoned mine owners, local governments, concrete producers, and road contractors to maximise the utilisation and recycling of coal ash, including fly ash, in an environmentally friendly way. The company focuses on rehabilitating abandoned mines through backfilling, utilising coal ash in cement production, using it as a cement replacement material in concrete batching, manufacturing blocks and pavers, and road construction. These efforts ensure environmental protection, reduce carbon emissions, conserve natural resources, and decrease the demand for virgin materials.

In the last two financial years, Refex Industries handled 8,844,996 MT of coal ash, diverting this industrial solid waste from unauthorised landfills and preventing land and water contamination. The equivalent amount of virgin raw materials was saved, as coal ash was used to replace these raw materials. The following table summarises the quantity of coal ash recycled and reused through various methods:

Quantity of Coal Ash Recycled (FY 2022-23 and FY 2023-24)

1. Ash quantity used in backfilling (Low land, abandoned mines, etc.) – 181,132 MT (2022-23) and 409,281 MT (2023-24)
2. Ash quantity delivered to cement plants for cement production (PPC) – 1,726,623 MT (2022-23) and 1,808,809 MT (2023-24)
3. Brick manufacturing – 75,958 MT (2022-23) and 184,933 MT (2023-24)
4. Ash quantity utilised in road construction – 199,730 MT (2022-23) and 1,357,319 MT (2023-24)
5. Used in Ready-mix concrete – 0 MT (2022-23) and 271,013 MT (2023-24)

Refex Industries' initiatives also contribute significantly to carbon emission reduction in the fight against global warming and climate change. Over the last two financial years, the total quantity of fly ash utilised in PPC cement manufacturing was 3,535,431 MT. According to a study by IIT Madras published in the International Journal of The Institution of Engineers in 2018, there is a reduction of 165 kg of CO2 emission per ton of PPC cement produced. This has resulted in a total reduction of 583,343 tons of CO2 emissions, which is a significant contribution to mitigating climate change.

Furthermore, according to the Federal Highway Administration in the USA, the use of fly ash in Portland Pozzolana Cement (PPC) reduces water demand by 10% when used in concrete production. This reduction in water usage would have led to significant water savings, given the amount of PPC cement produced from the recycled fly ash. However, the exact quantity of water saved is subjective and requires further study.

Refex Industries has also focused on rehabilitating abandoned mines and creating inhabitable land. In Chhattisgarh, due to extensive mining, commercially unviable mines are left abandoned, resulting in environmental damage such as leaching, soil erosion, water contamination, and land subsidence. Refex Industries leases or acquires such abandoned mines after obtaining the necessary permissions and approvals from relevant authorities for backfilling and rehabilitation, following pollution control board norms. During the last two financial years, the company rehabilitated approximately 71 hectares of abandoned mines and lowland, covering 27 degraded sites. This effort has created stable, usable

land equivalent to the size of 133 football fields, which can be used for commercial, recreational, and settlement purposes. This has helped reduce pressure on agricultural and forest lands.

The company's coal and ash handling division has played a vital role in pollution control and environmental management. By utilising coal ash in various ways, as mentioned earlier, Refex Industries has prevented land contamination, air pollution, and water pollution, while promoting biodiversity conservation. Additionally, in backfilling sites, green belts are being created through tree planting. Refex Industries pledged in 2023 to plant and nurture 100,000 saplings over the next few years, with 6,000 saplings already planted.

Refex Industries has also contributed to soil preservation. In the last two financial years, the company used 1,557,049 MT of fly ash in road construction, preventing an equal amount of topsoil from being used as fill material in road construction.

Looking forward, Refex Industries is focusing on research and development to find more sustainable ways to utilise this industrial waste. The company has signed several memorandums of understanding (MOUs) with research institutes to develop financially viable solutions to use coal ash as a raw material instead of treating it as waste. Through these initiatives, Refex Industries is helping the thermal power plant industry and the nation achieve Sustainable Development Goals (SDGs), particularly those related to life on land, life below water, good health and well-being, and climate action.

Refex Industries is a member organisation of the UN Global Compact Network India and has recently established a Centre for Business Leadership on Nature Restoration. This centre serves as a hub for knowledge sharing, enabling the company to collaborate with other business entities toward ecosystem restoration.

In conclusion, Refex Industries represents a niche and noble service industry that has demonstrated outstanding environmental management both within its operations and in the industry it serves. The company's significant contributions to coal ash management, environmental protection, and sustainable development make it a strong contender for the prestigious Green Apple Environmental Management Award. Recognition through this award will not only validate the company's achievements but also inspire continued improvements in environmental stewardship.

# SECURIGROUP

## SECURIGROUP'S ENVIRONMENTAL INITIATIVE

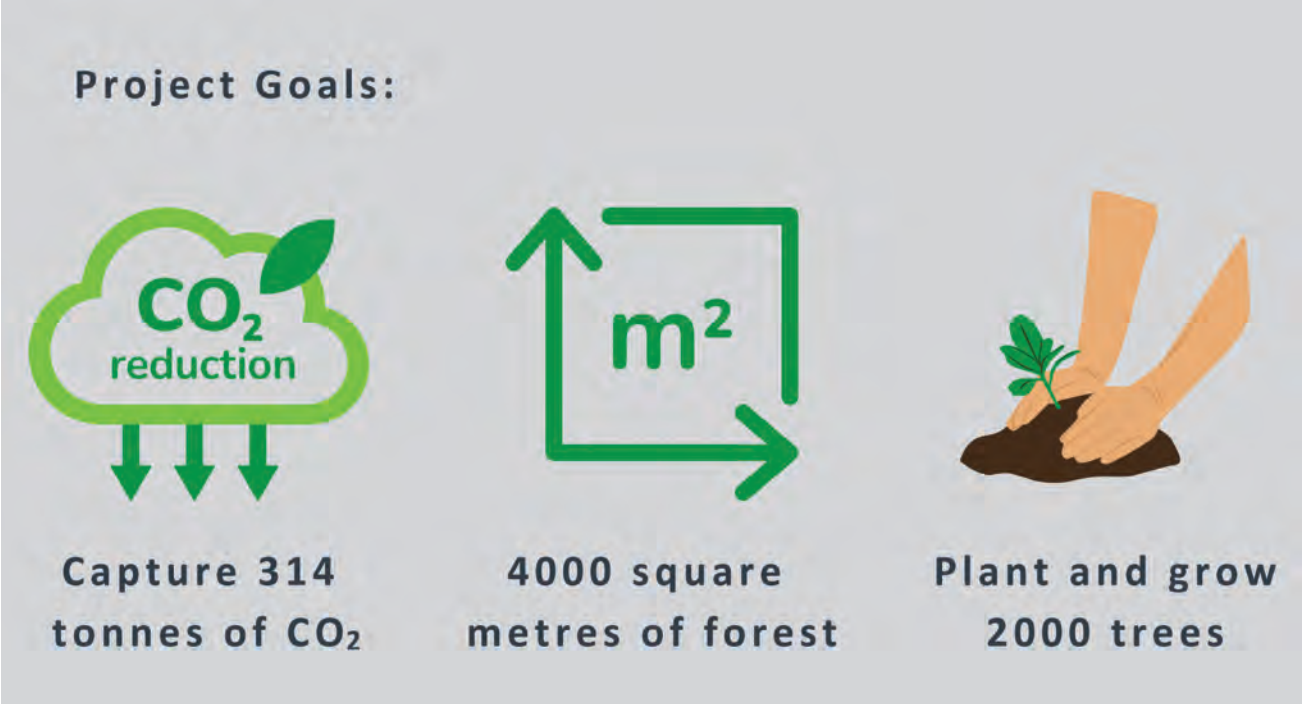
### INTRODUCTION

The primary aim of SecuriGroup's sustainability project was to integrate environmental stewardship and sustainable practices into every facet of our operations. Recognising the security sector's significant environmental impact, our goal was to lead by example in reducing carbon footprints, enhancing resource efficiency, and fostering sustainable development. This commitment was driven by our role as an early signatory of the Climate Pledge and participant in the Race to Zero campaign, aligning our targets with global efforts to combat climate change.

Our initiatives included retaining ISO 14001 certification for environmental management and achieving the PAS 2060 standard for carbon neutrality, underscoring our dedication to ongoing environmental responsibility. Transitioning to renewable energy sources, upgrading to energy-efficient systems, and implementing the SecuriGo digital platform were pivotal in reducing waste and improving operational efficiency. Additionally, our environmental restoration projects, such as planting over 2,000 trees, highlighted our efforts to offset carbon emissions and enhance biodiversity.

We aimed to set a benchmark within the security industry, demonstrating that sustainable practices can lead to both environmental and economic benefits. By integrating sustainability into our core operations, we sought to inspire similar actions across the sector, contributing to broader environmental and societal gains.

SecuriGroup's sustainability project has yielded significant achievements across various dimensions of sustainable development, economic impact, environmental benefits, and equity. Our commitment to environmental stewardship was exemplified by retaining ISO 14001 certification and achieving PAS 2060 for carbon neutrality, marking us as pioneers in the security industry at COP26.




Economically, we reduced operational costs through energy efficiency and waste reduction initiatives, such as upgrading to energy-efficient heating and lighting systems and implementing the SecuriGo digital platform to minimise paper usage. These efforts not only decreased our environmental footprint but also enhanced our operational efficiency.

Environmentally, we achieved carbon neutrality and substantially reduced emissions. Noteworthy achievements include a 15% reduction in our overall carbon footprint, transitioning 35% of our mobile fleet to electric or hybrid vehicles, and planting over 2,000 trees in Perthshire, Scotland. Our collaboration with the Woodland Carbon Code and the recycling of IT equipment through the Waste to Wonder initiative further underscored our environmental commitment.

In terms of equity, our initiatives improved local air quality and environmental health, benefiting the communities we serve. Additionally, our employees experienced enhanced workplace practices and engagement in sustainability efforts, fostering a culture of environmental responsibility.

These achievements position SecuriGroup as a leader in sustainable practices within the security industry, setting a precedent for others to follow.

## IN DETAIL

**What did the project involve doing?**

SecuriGroup embarked on a comprehensive project to integrate sustainability into every facet of our operations. This initiative encompassed a wide range of strategies, such as retaining the ISO 14001 certification (held for over a decade), achieving the PAS 2060 certification for carbon neutrality (the first in the security industry to do so, awarded at COP26), transitioning to renewable energy sources, reducing waste through digitalisation, and engaging in environmental restoration efforts.

Key actions included:

- Certification and Compliance: We retained the ISO 14001 certification for environmental management and achieved PAS 2060 for carbon neutrality, making us the first in the security industry to reach this milestone. This achievement was recognised at COP26.

- Renewable Energy Transition: We upgraded to energy-efficient heating and lighting systems, ensuring that all our electricity is sourced from renewable energy.
- Digitalisation: The implementation of the SecuriGo platform allowed us to digitise key processes, reducing paper usage and enhancing overall efficiency.
- Environmental Restoration: As part of our commitment to environmental recovery, we planted over 2,000 trees in our forest in Perthshire, Scotland. This initiative was accredited by the Woodland Carbon Code.
- Carbon Neutral Service Delivery: We launched a programme to calculate and offset the carbon footprint of our services using UNFCCC credits, further solidifying our dedication to sustainability.

These efforts demonstrate SecuriGroup's commitment to reducing our environmental impact while promoting sustainable business practices.

**Why did you do it?**

The driving force behind this project was our commitment to environmental stewardship and sustainable development. Recognising the security sector's role in contributing to environmental issues, we aimed to lead by example in reducing our carbon footprint, enhancing resource efficiency and promoting sustainable practices within our industry. Additionally, as an early signatory of the Climate Pledge and participant in the Race to Zero campaign, we are committed to achieving net zero emissions ahead of global targets.

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

The project's costs, covering certification processes, technology upgrades, tree planting initiatives, and the development of digital platforms, required an initial outlay. Funding came from a combination of company profits reinvested into sustainability initiatives and savings achieved through operational efficiencies. While exact figures are proprietary, the investment reflects our strategic prioritisation of sustainability as essential to our long-term success.

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

- Sustainable Development: Achieved ISO 14001 and PAS 2060 certifications, demonstrating continuous improvement in environmental management and carbon neutrality.
- Economic Impact: Reduced operational costs through energy efficiency and waste reduction.
- Environmental Benefits: Achieved carbon neutrality, reduced emissions, planted over 2,000 trees, and ensured all energy is sourced from renewables.
- Equity: Enhanced community health and wellbeing through improved air quality and environmental restoration efforts.

**Who and what benefited?**

Environment:

- 15% reduction in SecuriGroup's overall carbon footprint in the last 12 months.
- 35% of mobile fleet is EV or hybrid, facilitating over 600,000 of carbon free vehicle miles travelled.

- Digital reporting has reduced paper consumption. Over 425,000 forms were submitted via SecuriGo, saving the equivalent of 3.4 tonnes of CO2.
- 12 tonnes of carbon sequestered through our UK-based forest of 2,000 native trees and shrubs.
- Partner with Social Enterprise, Waste to Wonder, to recycle IT equipment and hardware this includes 21 laptops, 10 PCs and 59 Mobile Phones in the last 12 months.

Our clients and partners gained access to carbon-neutral services, demonstrating corporate responsibility, while employees benefited from enhanced workplace practices and increased engagement in sustainability initiatives. Additionally, our efforts contributed to improved local air quality and environmental health, particularly in areas where Low Emission Zone compliance was crucial.

**Longer term benefits?**

The project's longer-term benefits include sustained carbon neutrality, ongoing reductions in resource consumption, and the establishment of SecuriGroup as a leader in environmental responsibility within the security sector. Our initiatives have set a benchmark for best practices that can inspire similar actions across the industry, contributing to broader environmental and societal gains.

**Was there anything innovative about the project?**

Several innovative aspects stood out:

- Carbon Neutral Service Delivery Programme: A unique initiative calculating and offsetting service-related carbon footprints.
- SecuriGo Platform: Digitisation of operational processes, significantly reducing paper use and enhancing efficiency.
- Early Adoption of Global Commitments: Being among the first to sign the Climate Pledge and participate in the Race to Zero campaign.

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

The methodologies and frameworks we developed, particularly around carbon neutrality and digital transformation, are highly transferable. Other organisations can replicate our strategies for certification, renewable energy transition, waste reduction, and community engagement to achieve similar sustainability goals.

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

We learned that achieving sustainability requires a holistic approach and the engagement of all stakeholders. Continuous monitoring and improvement are essential. Moving forward, we plan to:

- Enhance Biodiversity: Plant an additional 1,000 trees by 2030.
- Reduce Emissions: Target a 25% reduction in emissions by 2030.
- Increase Recycling: Aim for a 20% increase in recycling and reuse rates by 2030.
- Expand Educational Efforts: Further engage and educate stakeholders on sustainability practices.

# SEOCHO-GU DISTRICT OFFICE

## REALISING ENVIRONMENTAL CONSERVATION IN THE HEART OF THE CITY: BANGBAESUP (FOREST) LIBRARY

### INTRODUCTION

BangbaeSUP (Forest) Library, which was designed to, along with Seoripul Neighborhood Park (on a lot of 140,000 pyeong (approx. 462,810m2)), exist in harmony with nature, practices carbon neutrality while welcoming 200,000 users annually through an eco-friendly operational system. By providing accurate information, it raises public awareness of climate change and how it affects our daily lives and the value of the environment. BangbaeSUP Library, located inside Seoripul Neighborhood Park, is a forest-inspired space for rejuvenation in the city that was designed to be at one with its natural surroundings. It not only collects and make available books on the environment but also carries out diverse environment-related educational programmes and campaigns. Knowledge/ information held by the library is used as the basis for exploratory activities in Seoripul Neighborhood Park. By satisfying users' desire for culture and information and teaching them about the value of the environment, the library enables users to practice sustainability in their daily routines. Through the library, an annual average of 200,000 users have put carbon neutrality into practice.

### IN DETAIL

The library is situated in Seoripul Neighborhood Park, an area spanning approximately 140,000 pyeong (462,810m2) that is Seocho District's largest green space and a popular destination among residents. It achieves harmony with nature in several ways, one of them being its exterior design, which resembles a bird's nest in a tree.

The design phase of the library, which opened its doors in June 2023, began in 2018. Every stage of the design and construction processes were incorporated with eco-friendly elements under the goal of creating a library that can be passed down for many generations (theme: "a happy space that changes lives through culture and the environment"). Its interior features a nature-friendly design, with furniture built with eco-friendly materials. Furthermore, in accordance with the library's environment theme, it comprises spaces named after the lifecycles of people and forests.

**Why do we need an environment-themed library?**

The consistent occurrence of climate crisis signals all over the world (e.g. heavy rainfalls, sea level changes, large forest fires) has raised awareness of climate change to unprecedented levels. Based on Korea's realisation of the seriousness of climate change, corporations and public organisations are

becoming increasingly interested in sustainable development and ESG management. Public libraries have also begun thinking about how to contribute to reversing the effects of climate change.

The public library changes its role and service formats over time to build civic capabilities. As the local organisation that forms the closest bonds with residents, the library is the best place for residents to create a sustainable future through concrete activities. Therefore, by providing accurate information, the library constantly works to make the public aware of how climate change affects our daily lives and the value of our environment. This is why BangbaeSUP Library is essential.

**What does BangbaeSUP Library do?**

BangbaeSUP Library is a space that residents play a significant role in shaping. It both educates residents and empowers them to promote environment-related issues. It conducts diverse projects by applying an environment theme to the data services, reading/culture services, and lifelong education activities provided by other public libraries. By integrating eco-friendly elements into library facilities and administrative services as much as possible, the library encourages users to apply their enhanced awareness of environmental issues to various aspects of their daily lives.

**What did the project involve doing?**

Designating personnel to oversee the library's day-to-day operations: Librarians (11) for designing library policy and providing library services; one environment expert responsible for designing environment-linked policies and services; one employee to handle administrative and budget-related matters; and one employee responsible for facility management.

Residents and library patrons' awareness of the need for and willingness to carry out action for carbon neutrality.

**Why did you do it?**

To raise awareness among residents of the seriousness of climate change and other environmental issues that affect the global community through the public library, an organisation with which residents interact frequently in the course of their daily routines, and 2) create a sustainable future by providing accurate information and resident-participatory activities.

**What cost and how was it funded**

- Operational budget needed for one year: KRW 160 million.
- 10% of total annual power consumption is from renewable energy (rooftop solar power generation system).

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

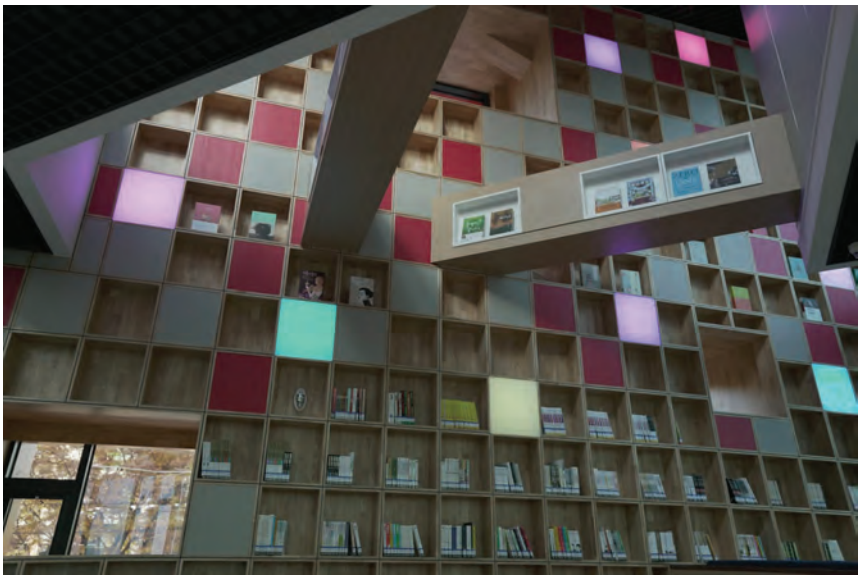
[Carbon emission reduction effect produced by 200,000 users in one year: 22,867kg (total), equivalent to planting 3,465 pine trees]

- Solar power generation system: 8% of electricity used by BangbaeSUP Library in one year is produced via solar power. Equivalent to reducing carbon dioxide emissions by 11.8 tons or planting 1,787 pine trees.
- Bird safety film: In Korea, eight million birds die each year by crashing into glass. BangbaeSUP Library, which has wall-to-floor glass panels, has not had a single bird collision for the past year.
- Zones for engaging in eco-friendly practices: A project conducted jointly with users (e.g. not using disposable wet wipes, using a reusable cup when brushing teeth, eating vegetarian once per week). Equivalent to reducing carbon emissions by 223kg (or planting 33 pine trees).
- Weekend shuttle bus: Transports users to and from the library on weekends, when the library use rate is highest. Reduction of car use for one year produced an effect equivalent to reducing carbon emissions by 351kg (or planting 53 pine trees), or five round trips by car between Seoul and Busan.
- Zero Waste Café: Avoided using a total of 50,139 disposable items (e.g. takeout cups, straws, lids) for one year. Equivalent to planting 1,316 pine trees.

**Long term benefits?**

Patrons become interested in climate change and environmental problems and, ultimately, respond proactively to climate crises through their use of the library.

The library can teach other organisations about, and also transfer to them, its tangible efforts on climate change (e.g. programmes), resulting in such organisations producing environment-benefiting outcomes.



**Anything innovative about the project?**

Public library specialised in the environment and operated via consignment by an environmental NGO at the request of the local government.

Environmental values realised not through the efforts of experts but the operation of a public library.

**Can other organisations benefit from implementing your methods?**

Yes. If other public libraries start offering eco-friendly services, their users will feel the need to be more environmentally-conscientious in their daily routines through the information and education on the environment gained from their library.

**What did you learn from the project?**

We discovered that the public library is uniquely positioned to raise awareness about climate change as a global issue, provide easy access to environmental information and values, and support sustainable development. BangbaeSUP Library is planning to expand its role beyond just offering information. It will strengthen its position as a resource for addressing various social challenges.

# SEONGDONG-GU OFFICE

## SEONGDONG-TYPE SMART SHELTER

### INTRODUCTION

Technological progress sometimes causes environmental damage, but no one can stop it. Therefore, we should aim to improve people's quality of life and sustainable development at the same time by finding ways to minimise environmental degradation using the technology we have. The core goal of this project is to increase the use of public transportation and ultimately reduce carbon emissions.

Seongdong-gu identified the biggest cause of low public transportation utilisation as the hardships of waiting in line, exposed to the elements, such as yellow dust, heat waves, and freezing temperatures. Therefore, Seongdong-gu built the first futuristic bus shelter in Korea for its residents, the Seongdong-type Smart Shelter. Although the advancement of technology has made it possible to lead a convenient and enriched life, various problems in society, including global warming, have made life difficult and uncomfortable for people.


Public institutions and governments should utilise advanced technology to provide services to improve and complement such problems, and Seongdong-gu has planned the 'Seongdong-type Smart Shelter' as part of its services.

The number of bus riders in Seongdong-gu has increased significantly as the number of shelters has expanded, and the number of people getting on and off buses near the shelters has increased in the first half of 2023 compared to the first half of 2019, before the installation of the shelters. Unlike traditional bus shelters, the shelters allow riders to wait for the bus indoors without being affected by the weather. It is also used as a heat wave and cold wave shelter, making it a facility befitting of an advanced society that embraces the transportation disadvantaged.

In addition, the project is a democratic policy project that was created through collaboration between Seongdong-gu, the central government, private companies, universities, Seongdong Police Station, and residents, and was further noted for reflecting the opinions and information of various segments of society. Plus, various safety devices and amenities provided in the shelter, as well as the operation of a 24-hour control centre, contribute to protecting residents and reducing crime rates.

Finally, the latest technology is being used to provide convenience to residents while minimising energy consumption by equipping and arranging energy-saving devices, adjusting operating hours, and managing a central control centre.

## IN DETAIL


According to data provided by the Seoul Open Data Plaza, the number of boardings and alightings at sheltered bus stops increased by about 3% (242,344) from 8,142,988 to 8,385,422 in the first half of 2023 compared to the first half of 2019, before the shelters were installed. In the first half of 2021, there were 546,315 boardings in Seongdong-gu, and in the first half of 2022, there were 590,413, an increase of about 8% (44,098). This is a meaningful indicator as activating the use of public transportation is the ultimate goal of shelter operations. According to data from the People Counting Programme installed by the city, the number of users has steadily increased since it was first installed in August 2020, and the number of shelter users exceeded 7.2 million as of May 2024.

The shelters are installed at 55 bus stops in Seongdong-gu. The first installation was funded by the Ministry of Land, Infrastructure, and Transport and the Seoul Metropolitan Government under the Smart Town Challenge project, and the facilities within the shelter were reflected through four meetings with residents at the 'Living Lab,' a resident-led innovation platform, where they suggested inconveniences and ideas for improvement when using existing bus stops. The installation site was also selected with the cooperation of nearby residents and the police department, taking into account various factors, including complaints about the installation request, traffic, and crime-prone areas. In addition, the design agreement with LG, a private company, and the cooperation of Hanyang University in composing healing music were the result of the participation of various members of society. Even now, as the installation continues to expand every year, residents are asked to provide their preferred locations, which are then reviewed for eligibility. In addition, a satisfaction survey is regularly conducted to receive and reflect residents' opinions on the operation of the shelter. As a result, the third satisfaction survey in the first half of 2024 showed a high satisfaction rate of 96.1%.

Signage is installed in the shelter that provides not only traffic information but also weather information, including fine dust concentration, and the arrival of the waiting bus is announced on the signage screen and by voice. In addition, through the glass windows of the shelter, you can see the arrival of the bus and its exact location from inside the shelter as if you were outside. Furthermore, the shelter is equipped with air conditioning, air sterilisers, blinds, and verticals to keep users comfortable and safe while waiting for transit, regardless of the weather outside.

Inside the shelters, there are indoor chairs for pregnant women, the elderly, and the disabled, as well as spaces for wheelchairs and strollers. Recently, a framed hearing loop was also installed to help hearing-impaired users hear bus arrival announcements, which received a high score of 75% very satisfied and 25% satisfied. In terms of safety, the control centre monitors CCTV around the clock in case of any accidents. In addition, the shelter is equipped with abnormal sound detection sensors, emergency bells, and automated external defibrillators so that quick action can be taken if something goes wrong inside the shelter. In the first half of last year, these features were used to safely return an elderly woman with dementia


to her home, and in an emergency rescue of a woman experiencing dating violence. These devices were installed to prevent safety accidents inside the shelter, but they have also been effective in protecting residents' daily safety and responding quickly to crimes. In addition, data provided by the Seongdong Police Department confirmed that the five major crime rates in Seongdong-gu have decreased by about 21% (2,767 (2017) → 2,194 (2022)) since the shelter was installed.

The shelter was designed to reduce energy consumption by placing the entrance door on the side to prevent air leakage from the room. The shelter can be used at any time throughout the year, but it is not operated during the late-night hours (00:00 to 04:00) to save energy. Similarly, doors are open and air conditioners are turned off during spring and fall, not during heat waves and cold spells, and indoor temperatures are set to the appropriate temperature for the weather and season to save energy. The heating and cooling systems are managed by a centralised control centre to prevent users from wasting energy by changing settings at will. In addition, solar panels were installed on the roof of the shelter to minimise the energy used to provide comfort to users, and the brightness of the lights is automatically adjusted according to the outside light level so that only the necessary amount of energy is consumed. In particular, air curtains were installed on the entrance doors in 2014 to improve energy efficiency.

In addition, as it is known to be a facility with high resident satisfaction, visits from other countries and local governments to Seongdong-type smart shelters for benchmarking purposes are steadily underway. By encouraging more people to use the shelter, Seongdong-gu aims to ensure the safety of residents and improve the utilisation of public transportation. To this end, it is constantly looking for advanced and eco-friendly technologies that can be incorporated into the shelter's operation and advanced.

# SGN

## OBAN BIODIVERSITY IMPROVEMENT PROJECT

### INTRODUCTION

In March 2023, we completed our largest biodiversity enhancement project to date at our site in Oban, Scotland. We undertook biodiversity actions aimed at increasing grassland, river, and woodland biodiversity, creating new habitats for a variety of species to make our Oban site their home. The overall aim is to increase the biodiversity value of the site and achieve biodiversity net gain.

Woodland management was central to our biodiversity improvements at Oban. We planted over 170 new trees along the riverbank and open area to enhance woodland diversity, including Alder, Aspen, and Oak. Veteranisation of trees was also undertaken. We carried out thinning and pollarding of Willow species to encourage a wider variety of age classes to come through and improve vertical structure. Arisings were recycled and stacked to create reptile refugia and deadwood for invertebrates and fungi (Approx. 0.522 Hectares).

We created a 2870m2 wildflower meadow to attract more insects, introducing Yellow Rattle as part of the mix due to its ability to allow other wildflowers to flourish (Approx. 0.287 Hectares). Many new habitats for species were created by the installation of bird boxes for kingfishers, house sparrows, and swifts, as well as nesting boxes for red squirrels and pine martens. Bat boxes were installed on trees above three metres to further encourage roosting on the site.

The project also included innovative actions such as building and installing an artificial otter holt within the riverbank to provide safe refuge and encourage breeding.

### IN DETAIL

At SGN, we recognise the profound impact the environment has on the quality of life and wellbeing of our people and the communities we serve. We are helping to play our part in reversing the loss of biodiversity by committing land in our company portfolio to biodiversity enhancement projects that will improve local ecosystem resilience and achieve biodiversity net gain.

We conducted a review of the sites we own and manage to identify those suitable for biodiversity enhancement projects, and this included our site at Oban, Scotland, which is only one of 19 biodiversity improvement projects we have implemented so far across both our networks in Scotland and Southern. The project followed a step-by-step process which is used as a blueprint for our other biodiversity projects.

In addition to the 19 improvement projects implemented so far, we have another 12 projects in the pipeline for 2024/25. The process followed was to:

- Identify the baseline biodiversity condition
- Develop a site-specific improvement strategy
- Carry out the work identified
- Implement ongoing site maintenance
- Resurvey to determine improvements

The site was very overgrown with lots of invasive weeds (Himalayan balsam). There were also lots of dead and fallen trees in the river and rubbish along the riverbank. Keystone Ecology conducted an assessment of the site using the Natural England Biodiversity Metric 3.1 calculation tool. The grassland (0.29 hectares) baseline condition was assessed as 'poor' with a score of 1. Whilst the baseline condition of the woodland (0.52 hectares) was assessed as 'moderate' with a score of 2. Both grassland and woodland were assessed as having medium strategic significance.

The original project cost was approx £26,000, and this was funded as part of our Ofgem RIIO-2 funding mechanism. Ongoing improvement to help establish the wildflower meadows is costing £2860 per visit to cut and remove arisings, with 3 visits planned for this growing season. The site will be subject to ongoing site maintenance and will be resurveyed in July/August 2024 to determine how ecologically valuable the habitat created is and determine biodiversity net gain.

Through various internal communication channels, we ensured colleagues were kept informed of project progress, and those located nearby were given the opportunity to see first-hand the improvements made on site. We also installed a sign at the entrance of the site to communicate the improvements made.

Lessons learned for future projects include ensuring regular site visits ahead of work commencing. There were 3 businesses which backed onto our site and had, in between site visits, generated rubbish which needed to be cleared prior to work commencing and took extra time and money we had not anticipated.

We also want to ensure we engage with our people and the local community more. During our project at our former gasholder site in Windygates, Fife, we engaged with the local primary school and the local community group (Kennoway Men's Shed) to build bug hotels. Going forward, we will be looking for the potential opportunity to align our biodiversity projects with our employee volunteering programme to enable even wider engagement and impact.

Everyone has a part to play in helping to stop and reverse biodiversity loss. Graeme Walker, our Estates Coordinator who managed the Oban site project and other projects, is an outstanding ambassador for biodiversity, continually sharing his passion and enthusiasm for the subject, and encouraging colleagues to participate and engage in our biodiversity projects. He most recently took the Environment and Sustainability Team on a tour of the Windygates site in Fife, to see first-hand the improvements made there.

# SinAmor FILMS

## GREEN SUPERHEROES 2030

### INTRODUCTION


SINAMOR FILMS, led by filmmaker and producer Los Angeles Barea, presents the inspiring documentary *"GREEN SUPERHEROES 2030"*. This film showcases a dynamic group of young environmental activists—from ages 5 to 17—who are leading the charge in tackling our planet's most pressing issues, including deforestation, plastic pollution, climate change, and conservation. The project is not just a documentary; it's a movement to inspire and empower the next generation to be active participants in building a sustainable future.

### IN DETAIL

#### Project Overview

*GREEN SUPERHEROES 2030* follows the journey of ten young environmental activists from diverse backgrounds, working across continents—from the Amazon Rainforest to the Netherlands, the United States, Brazil, and Kenya. These passionate youth are taking tangible action, whether it's developing microplastic detectors, launching tree-planting initiatives, or pioneering waste-reduction programmes. Some of them are students of Jane Goodall. With a mission to spread awareness about environmental stewardship, the documentary's motto is: *BE GREEN, BE A HERO*.

#### The Team

Los Angeles Barea - Creator/Director/Producer
Producers: Chelo Alvarez Stehle, Elaine Roberts
Environmental Green Heroes:

- Ryan Hickman (USA)

- Katia Thomas (USA, UK)
- Nina Gomes (Brazil)
- Janeth Guanulema (Amazon Rainforest Ecuador)
- Sam Torres (USA)
- Ianna Mallayka (Kenya)
- Jessica Ong (Thailand)
- Kyle Tianshi (USA)
- Justin Sather (USA)
- Connor Berryhill (USA)

**Hosts**

- Mandeiya Flory (USA/Ghana)
- David Gil (Netherlands)
- Zachary Fox-DeVol (USA)

**Project Objectives**

1. Raise Awareness: Promote environmental awareness on a global scale, with a special focus on the youth-driven efforts to tackle critical issues like climate change, pollution, and biodiversity loss.
2. Inspire Action: Empower young people around the world to become Green Superheroes by taking action in their communities. The documentary will showcase real-life heroes and encourage others to join the movement.
3. Global Outreach: Extend the impact of the film to a wide audience across continents, ensuring that children, families, and educators have access to the film and its accompanying educational resources.
4. Create a Legacy: Establish the foundation for *GREEN SUPERHEROES* to continue the mission beyond the film, creating educational programmes, partnerships, and outreach efforts to engage future generations in climate action.
5. Collaborate with Industry Leaders: Form strategic partnerships with brands, nonprofits, and influencers committed to environmental change to amplify the documentary's message and extend its reach. With plans for a sequel *(GREEN SUPERHEROES 2)* and potential TV adaptations, your partnership could extend into long-term engagement with an expanding brand that continues to inspire and empower new generations.

**Why Partner with Us: The Power of "GREEN SUPERHEROES 2030"**

1. A Global Movement: Unlike traditional environmental documentaries, *GREEN SUPERHEROES* features children as the heroes, making the message relatable, inspiring, and actionable for young viewers worldwide.
2. Award-Winning Project: The project has already garnered recognition, including a Gold Award at the International Green Apple Environment Awards 2024, Winner at The Green World Awards 2025, Grand Jury Award at AWARENESS Film Festival, Grand Jury Award at San Diego International Kids Film Festival, and Best Documentary at The Children's International Film Festival of Wales, reinforcing its credibility and appeal.
3. Diverse Audience: The documentary appeals to a broad demographic—from educators and environmentalists to parents and young people globally. By partnering with SINAMOR FILMS, you'll align your brand with a project that embodies the future of environmental activism—innovative, inspiring, and rooted in positive, solution-oriented messaging. It positions your brand as a key supporter of youth-led sustainability initiatives, strengthening your corporate social responsibility (CSR) profile.


Green **Superheroes** Project

This global documentary, focused on educational outreach, offers a unique opportunity to support a cleaner, greener planet. SinAmor Films invites you to join a worldwide initiative, filming across the globe and connecting with changemakers—plus, we're open to traveling to your country.

**Let's Make a Difference Together**

*GREEN SUPERHEROES 2030* is a global movement inspiring a sustainable future. SinAmor Films aims to empower young heroes to take action and make a lasting impact. Let's inspire change, one superhero at a time.

GREEN SUPERHEROES 2030
BE GREEN, BE A HERO

SINAMOR FILMS


Winner Best Documentary
The Children's International Film Festival of Wales
2024

Award Winners
San Diego International Kids' Film Festival
2024

MY HERO INTL FILM FESTIVAL
WINNER

GREEN WORLD AWARDS

Grand Jury Award
Documentary Feature
Awareness Festival
2024

Exceptional Merit
Documentaries Without Borders
Intl. Film Festival 2024

Excellence
Nature Without Borders International Film Festival
2024

GREEN APPLE ENVIRONMENT AWARDS
FOR HELPING THE ENVIRONMENT
WINNER 2024

Filmmaker Los Angeles Barea presents the inspiring documentary "GREEN SUPERHEROES 2030", produced by her company SINAMOR Films. The film follows the journey of ten young environmental activists from diverse backgrounds, working across continents—from the Amazon Rainforest to the Netherlands, the United States, Brazil, and Kenya. These passionate youths are driving real change, whether it's developing microplastic detectors, spearheading tree-planting initiatives, or pioneering waste-reduction programs. Some of them are even students of Jane Goodall. Film is a powerful tool, and our goal is to create a movement that inspires children and families around the world to embrace sustainability and become heroes in protecting our beautiful planet.

www.greensuperheroesfilm.org

Join us as a partner.

# SONY UK TECHNOLOGY CENTRE

## BUILDING A SUSTAINABLE FUTURE FOR ALL THROUGH A HOLISTIC APPROACH TO STRATEGY WITH A WHOLE TEAM APPROACH

### INTRODUCTION

Sony UK Technology Centre in Pencoed, South Wales, which employs over 600 people, aims to make a positive difference and build a sustainable future for all by using a holistic approach to embed 'sustainability' into the company culture and proactively generate actions which deliver quantifiable results. This is part of the Sony UK TEC Mid-Range Plan commitment, where all actions are measured, and progress is reported to the wider Sony Corporation.

The establishment of an employee-driven network has generated ideas and actions for improvements across the site through a whole-team approach. Additionally, the company runs a diverse schools programme, which has engaged 31,415 pupils since its launch. This programme covers various subjects, including Environmental, STEAM, coding, cyber security, creative arts, and industry, aiming to inspire the next generation.

Sony UK TEC has also implemented a robust environmental plan that has already resulted in significant achievements. These include purchasing 100% Renewable electricity (RE100), an approximate reduction of 27% in electricity used per product (compared to the previous year), and a 12% reduction in Scope 1 & 2 CO2 emissions (compared to the previous year). Furthermore, the company has installed Solar PV, which currently generates approximately 15% of all consumed energy, with further installations ongoing. Sony UK TEC has also achieved zero waste to landfill since 2019, introduced Electric Pool cars, and installed EV charging points.

In collaboration with various suppliers, Sony UK TEC has reduced direct material shipment distances, cutting 4.7 million KM in airmiles and reducing CO2 emissions by 458.23 tonnes. The company also focuses on biodiversity at its Pencoed site's environmental centre, which includes initiatives such as the installation of

employee-made bird boxes, six honeybee colonies, and 15 allotments for employee use.

Sony UK TEC has earned several notable environmental certifications, including ISO 14001 (environmental in 2004), ISO 50001 (energy in 2016), and Green Dragon Level 5, Wales's highest environmental accreditation, which was awarded in 2023.

## IN DETAIL

Based in Pencoed, South Wales, Sony UK Technology Centre (UK TEC) is a manufacturing and solutions centre with 50 years' experience producing high-end Sony broadcast equipment and third-party products. With a team of 600 experienced employees, it also hosts a Service & Repair Centre and serves as an office hub for local small and medium-sized businesses. Sustainability is an integral part of the culture at UK TEC Pencoed, and a key element of our current mid-range plan to "Build a Sustainable Future for All: Transformed by technology, created by people". This plan aligns with the brand's wider goal of achieving a Zero Environmental Footprint by 2040, supported by various sources including the United Nations' Sustainable Development Goals, Welsh Government, and the local Council. The strategy includes measurable goals & targets to foster a culture where the environment & sustainability is prioritised.

The site has achieved several environmental certificates and awards, including: – ISO 14001 (achieved in 2004) - an international standard that sets out the requirements for an environmental management system. It helps organisations improve their environmental performance through more efficient use of resources and reduction of waste. – ISO 50001 (achieved in 2016) - an international standard to effectively measure and manage energy use to help reduce/manage energy usage and costs. – Green Dragon environmental standard (achieved in 2023) - awarded to organisations who

are taking action to understand, monitor and control their impacts on the environment. It is operated on a stage-based system, allowing businesses to progress through levels 1-5, with Level 5 being the highest achievement. – GEMS (Global Environmental Management Systems) - UK TEC is also recognised by the wider corporation as one of the leading GEMS sites responsible for the majority of Sony's environmental footprint due to the business operations that are performed there.

In addition to the ongoing sustainability efforts, in 2022 UK TEC's annual offsite teambuilding event for all 600 employees focused on 'Sustainability', which kicked off a new push for improvements through proactive employee engagement. The teambuilding activity started with creating awareness of what 'sustainability' means, and how it impacts society. All employees then worked together to build 165 bird boxes, bug hotels and bat houses using FSC wood, which have since been installed at the site and donated to local schools and businesses to help increase biodiversity and awareness in the local community. All 600 employees have since participated in sustainability/environmental training. A UK TEC Pencoed sustainability network has been established and actively generates improvement ideas and campaigns both internally and externally.

In November 2023, Sony in Pencoed held its first Supply Chain Sustainability Conference and Awards. This event brought together 65 global supplier companies for a conference discussing the Sony Sustainability Philosophy and Goals, and demonstrating how UK TEC in Pencoed carries out responsible manufacturing. They also set expectations about future collaboration and how "we" are all an important part of the solution to the environmental crisis. UK TEC encouraged all suppliers to submit their own environmental best practice nominations, which were judged by the Pencoed team and celebrated at the event. This initiative further generated conversation about learning from each other's successes.

This activity has already led to further overseas collaboration between Sony and its suppliers for Direct Material Shipments, which reduced 4.7 million kilometres of airmiles and decreased CO2 emissions by 458.23 tonnes. In addition, in 2023, UK TEC hosted a pan-European Sony Environmental Health and Safety conference, which included 17 senior decision-makers across six Sony sites. They shared best practices and collaborated on sustainability topics.

UK TEC also runs a robust Schools programme that engages students of all ages, from primary school to university level. Since the programme's inception in 2012, 31,415 pupils have visited the site across five different types of workshops, helping to inform and prepare them for future careers in industry. Since 2022, two new programmes have been added to the UK TEC offering, including an environmental biodiversity 'Forest School,' where children use the site's Eco Centre to learn about biodiversity. There is also a programme focused on sustainability.

As a next step, these programmes will be extended to teachers in a 'train the trainer' format, to continue driving awareness of these important topics with the younger generations.

The Pencoed premises have a green space 'Eco Centre' which was built in 2006 with the help of a local school for adults with learning difficulties. It is also the home of 15 allotments which were constructed by UK TEC employees and are now used all year round for employees to grow local produce with low food miles. Within the space is also a bench produced by a local company, which is made of single-use personal protection equipment collected during the COVID-19 pandemic. There are also 6 bee colonies at the site, totalling ~120k honeybees. Looking after them are 10 UK TEC employees who have been trained as beekeepers by a local charity. This activity supports biodiversity & pollination, and the honey produced is sold onsite with all proceeds going to charity.

# Environmental Best Practice
Volume 29


**Energy & Waste Management**

- Renewable electricity: Since 2020, the site has been purchasing 100% Renewable electricity (RE100), making it a carbon-neutral operation.
- Reduction: A site-wide project to upgrade equipment, heating and air handling systems, lighting, and building insulation resulted in an approximate reduction of 27% in electricity used per product (vs previous year), and a 12% reduction in Scope 1 & 2 CO2 emissions (vs previous year).
- Generation: Through a major Solar PV installation project, the site currently generates ~15% of all consumed energy; the additional planned installation of 900+ solar panels will aim to bring this figure to 50% by 2027.
- The site is operating zero waste to landfill since 2019. Targets have been set to reduce waste across the site. Any waste that cannot be reused, repurposed, or recycled goes to waste-to-energy recovery.
- Electric Pool cars & EV charging points at the site car park.

# THE SWAN CENTRE, EASTLEIGH

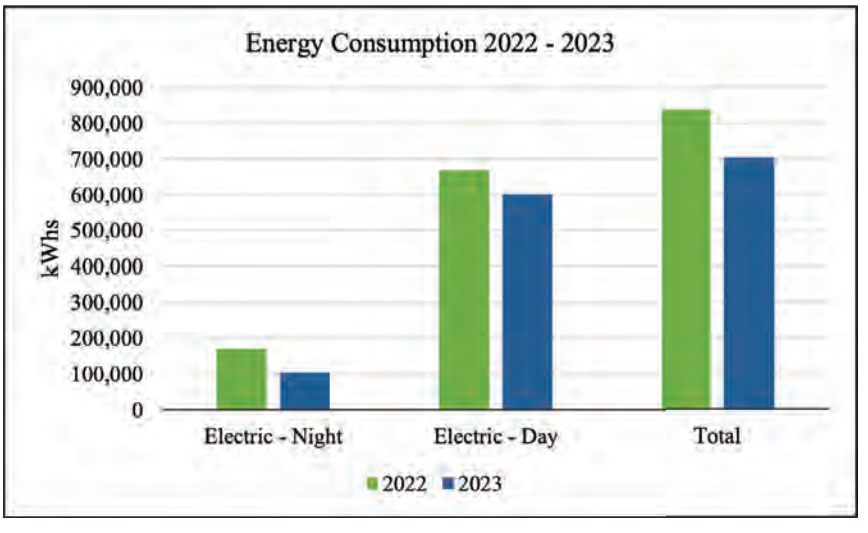
## NIGHTTIME SAVINGS

### INTRODUCTION

To reduce nighttime electricity consumption at the Swan Centre without having a negative impact on operational performance. The “nighttime savings” project resulted in a 38.8% reduction in nighttime electricity usage at the Swan Centre. This equates to a reduction of 66,278kWh and an annual monetary saving of over £17,000. In addition, the Swan Centre also reduced daytime electricity consumption by 10% saving a further 66,851 kWh. The total reduction in electricity usage was 133,129 kWh which equates to a monetary saving of over £38,000.

### IN DETAIL

This year, the Management Team at the Swan Centre initiated a project to specifically look in detail at nighttime electricity consumption. The “nighttime savings” initiative reduced nighttime electricity usage by 38.8% / 66,278 kWh, generating an annual monetary saving of over £17,000. Whilst looking in detail at opportunities to reduce nighttime consumption, the outcome also identified additional daytime savings of 66,851 kWh. The total reduction in electricity usage for the year was 133,129 kWh, which equates to a monetary saving of over £38,000. The initiative was not primarily about capital investment or new technologies. Instead, the campaign focused on making the best use of the existing BMS and analysis of energy data.




### ACTIONS TO REDUCE NIGHTTIME ELECTRICITY CONSUMPTION

#### Out of Hours Review

The team walked the site out of hours to identify any parts of the operation that were likely to be adding to nighttime electricity consumption. Initially, rather than find opportunities, this process reinforced the success of previous projects, including lighting sensors, AHU timers, and escalator run times. All these areas were assessed as already being set to optimal performance. A review of BMS timers also suggested the plant operation was being correctly optimised; however, walking the plant areas, it was clear this was not actually the case. The review identified cooling towers, as well as some motors and pumps, were running in plant areas when there was no requirement for the operational efficiency of the Centre.

It was important to remember some nighttime usage was part of previous initiatives to reduce total energy consumption. For example, nighttime purging takes advantage of cooler air externally overnight and reduces the need for mechanical cooling during the day. We were careful not to reverse any of these strategic decisions that were already generating significant savings in daytime energy consumption.

### BMS Updates

To understand why some plant appeared to be operating in the early hours with no operational gain, we engaged the help of our BMS engineers on the next service visit. This identified that, while timers on the front end BMS had previously been optimised, there were significant parts of the system that had been locked out of Centre control. The engineers updated the programming during the service to ensure the Centre's own M&E engineers could adjust the timer settings for the cooling towers, motors, and pumps that had previously been hidden. This was completed at no additional cost to the Centre. Ultimately, this enabled us to reduce the runtime of these big draw items, significantly reducing nighttime electricity usage. We were also able to switch the plant off earlier, which resulted in additional daytime savings.

### Sensors and Timers

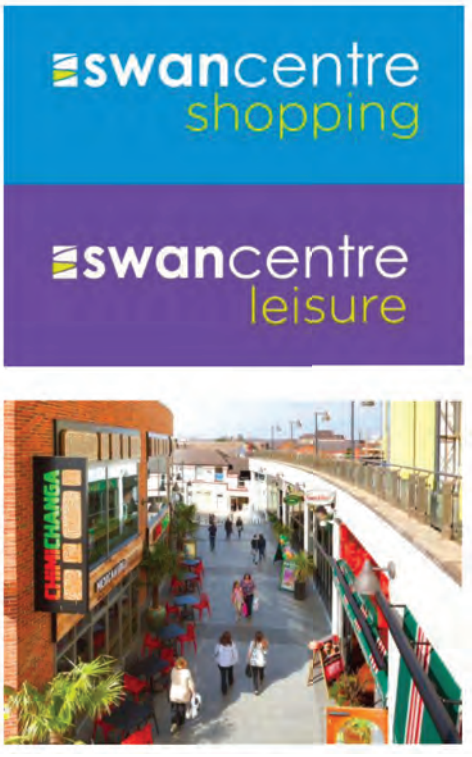
The nighttime review also identified smaller opportunities to reduce nighttime electricity consumption, where some sensors had failed and where a section of lighting was not being correctly controlled by timers in place.

### Moving Forwards

The Swan Centre is always looking for the next initiative to improve our carbon footprint and reduce our energy consumption. A new M&E PPM is currently underway, and we hope to build improved energy efficiency into our planned lifecycle replacement programme over the next five years.

### Sharing Best Practice

The "nighttime savings" initiative has proved to be a highly successful way of identifying significant savings in our electricity usage. The project was zero cost and simple to implement. The Centre team is looking to encourage its retail tenants to complete a similar exercise. The details of this initiative have been shared with the landlord to see if it could also be used to generate savings across its portfolio of 27 shopping centres.

# SWCORP MALAYSIA

## EVALUATION OF SUSTAINABLE WASTE MANAGEMENT PRACTICES AT LIMA 2023.

### INTRODUCTION


The objective is to educate individuals about making conscious choices to reduce and separate waste and avoid littering. Benefits of Early Campaigns and Waste Separation:

i. Behavioral Change: Early campaigns instill sustainable waste management practices in the community's mindset, fostering responsible behaviour from an early stage.
ii. Efficient Resource Recovery: Waste separation enables effective recycling by keeping materials uncontaminated and suitable for reuse.
iii. Reduction in Landfill Waste: Effective waste separation decreases the amount of waste sent to landfills, extending their lifespan.
iv. Marine Pollution Reduction: Proper waste management prevents waste from reaching water bodies and contributing to marine pollution.
v. Circular Economy Alignment: Both campaigns and waste separation support the circular economy by minimising waste and maximising resource use.

Collaborative planning involving stakeholders is essential to implement effective solutions. The "National Waste Minimisation and Recycling Policy" on Langkawi Island, Malaysia, exemplifies this approach, integrating awareness campaigns, waste segregation methods, and climate change measures. This policy establishes the groundwork for sustainable waste reduction, recycling, and management, with the potential to incorporate climate considerations through joint planning with stakeholders.

**Methane Emission Reduction**

Organic waste decomposition in landfills generates methane, a potent greenhouse gas. Planning and stakeholder engagement play a pivotal role in executing strategies to segregate organic waste for composting or anaerobic digestion. Through these efforts, methane emissions can be significantly curbed. This approach directly aids climate change mitigation as methane's heat-trapping capacity exceeds that of carbon dioxide. This year's event demonstrated effective planning and collaboration, resulting in a 19% reduction in daily carbon emissions, dropping from 98.54 tCO2e to 79.18 tCO2e. Concurrently, waste generated per person decreased from 1.5 kg to 1.35 kg.

**Mitigation of Landfill Emissions**

Effective waste separation necessitates comprehensive planning involving stakeholders at every stage. Structured planning and stakeholder engagement minimise mixed waste deposition in landfills. This curtails the breakdown of organic materials and consequent greenhouse gas release. By limiting landfill emissions, waste separation enhances environmental health and reduces the carbon footprint linked to waste management.

Notably, recovering approximately 5.5 tonnes of plastic bottles daily from a waste tonnage of around 100 tonnes underscores the success of planned strategies and collaborative efforts.

## IN DETAIL

The paper explores a comprehensive waste management and awareness campaign implemented during LIMA 2023 on Langkawi Island, Malaysia. The overarching objective of the campaign was to educate individuals and promote responsible waste disposal practices, with a strong emphasis on waste separation and reduction of littering. The initiative aimed to instill sustainable waste management behaviors early on in the community, emphasising the benefits of such practices including behavioral change, efficient resource recovery through recycling, reduction in landfill waste, prevention of marine pollution, and alignment with principles of the circular economy.

The campaign commenced with thorough briefings to traders under the Langkawi Local Council and Alpine contractors. These sessions, held in May 2023, underscored the importance of waste separation and cleanliness responsibilities. Traders were educated on their role in waste segregation, ensuring that recyclables, organic waste, and non-recyclables were properly sorted and disposed of. Additionally, they were reminded of their responsibility to maintain cleanliness in their designated areas and encourage visitors to adhere to proper waste disposal practices.

To further amplify its impact, an education and awareness campaign was strategically deployed on-site during the event. This included the placement of visually appealing bunting, banners, and posters near high-traffic areas such as entrances and food courts. These materials conveyed clear messages about waste separation, recycling practices, and environmental consciousness, aiming to influence visitor behavior positively. The strategic placement of these educational aids ensured widespread visibility and engagement among event attendees, reinforcing the importance of responsible waste management throughout their experience.

Central to the campaign's execution was the provision of clearly labeled waste bins for different types of waste (recycling, compost, landfill) throughout the event venue. These bins were accompanied by proper signage and color-coding to facilitate easy and correct disposal by visitors. Regular waste collection was also maintained to prevent overflow and ensure that segregated waste streams remained uncontaminated.

A pivotal component of evaluating the campaign's effectiveness was the implementation of a comprehensive waste audit. This audit involved the daily assessment of a sample of recycling bins, constituting 15% of the total bins available. Visual inspections were conducted to gauge recycling compliance, utilising a grading system to quantify levels of engagement ranging from 25% to 100% recycling rates. The audit provided valuable insights into recycling behaviors, highlighting factors such as material composition, visual cues, and temporal dynamics that influenced recycling participation.


In parallel, participant surveys were conducted during LIMA 2023 to gauge the reception and impact of the initiatives. Despite challenges in reaching the intended target of 500 respondents, the surveys revealed high levels of awareness among participants regarding the green initiatives integrated into the event. Overwhelming percentages acknowledged awareness of the campaigns and found waste disposal facilities easily accessible. These findings underscored the success of communication efforts and strategic planning in promoting sustainability and environmental consciousness among event attendees.

The paper also discussed the broader implications of the waste management initiatives in relation to Sustainable Development Goals (SDGs). Specifically, the efforts aligned with SDGs such as Climate Action (Goal 13), Responsible Consumption and Production (Goal 12), and Sustainable Cities and Communities (Goal 11). By reducing carbon emissions, promoting sustainable consumption patterns, and fostering cleaner urban environments, the initiatives contributed to global efforts towards sustainable development.

Furthermore, the write-up highlighted specific environmental impacts and benefits achieved through the campaign. These included significant reductions in daily carbon emissions and waste generation per person, reflecting the efficacy of planned strategies and collaborative efforts in mitigating environmental impact. The integration of waste separation methods and climate change measures exemplified a holistic approach to waste management, emphasising the importance of stakeholder engagement and collaborative planning in achieving sustainable outcomes.

Lastly, the paper emphasised the long-term benefits of early campaigns and waste separation programmes in preserving marine biodiversity on Langkawi Island. By reducing marine pollution and promoting responsible waste disposal habits, the initiatives aimed to safeguard marine ecosystems from the detrimental effects of improperly managed waste. These efforts were seen as critical in fostering community engagement, improving waste infrastructure, and supporting a circular economy approach to resource management.

In summary, the write-up provided a detailed account of the planning, implementation, and evaluation of a comprehensive waste management and awareness campaign during LIMA 2023. It underscored the importance of early education, stakeholder collaboration, and strategic communication in promoting sustainable practices and environmental consciousness at large-scale events. Through effective waste separation, recycling initiatives, and community engagement, the campaign set a precedent for future sustainability efforts, aiming to inspire similar initiatives globally and contribute to a cleaner, more sustainable future. Overall, the programme demonstrated effective strategies in promoting sustainability and environmental consciousness at large events, aiming to reduce environmental impact and foster community engagement in waste management practices.

# SYSCO

## DELIVERING A BETTER TOMORROW

### INTRODUCTION

We believe in acting today to protect tomorrow, so there's never been a better time to take a fresh look at sustainability. Our sustainability approach is underpinned by robust goals covering community, inclusion and diversity, responsible sourcing, packaging, carbon, and renewable energy. The 'Planet' pillar of the strategy is about protecting our planet by using resources and energy efficiently and cutting emissions. Our team is focusing on improving infrastructure to meet our science-based target, whilst maximising fleet efficiency and transforming to low-carbon tech. For this submission, our focus is waste management.

Picture a traditional waste hierarchy: it's built on landfill as the dominant element, with each element above becoming smaller and smaller. We've already transitioned to a diamond hierarchy, where the focus is on maximising recycling and reducing our general waste arisings. Now, we're focused on reducing and reusing and moving to an inverted hierarchy.

In 2019, we produced 17,150 tonnes of waste, and our goals included:

- Reducing waste arisings per £M revenue.
- Continuously increasing year-on-year recycling rates.
- Halving food waste by 2030, moving up the waste hierarchy, and improving forecasting and planning.

The aim is to make sure food is eaten, and donating surplus is a vital part of this.

Our average recycling rate in 2019 was 63% (10,821 tonnes), with a further 20% (3,451 tonnes) being sent for reuse. The remaining 17% (2,876 tonnes) was sent to energy recovery, ensuring we met our zero landfill commitments. In total, 17,150 tonnes equaled 4.006 tonnes per £M turnover.

Fast forward to 2023, and recycling has increased to 78% (12,778 tonnes), with an additional 10% (1,519 tonnes) of materials being sent for reuse. The remaining 12% (2,131 tonnes) is still going to energy recovery facilities. In total, 16,431 tonnes equaled 3.400 tonnes per £M turnover.

We've reduced waste arisings by 15.2% per £M turnover while continuing to increase our market share. At a glance, the reuse rate has decreased, and this could easily be perceived as a negative. However, the reality is that we've significantly improved our management of wooden pallets, using less and keeping them in use for longer. We're incredibly proud that the volume of pallets we manage as waste for repair and reuse has more than halved. This is a fantastic success story because of its focus on reducing and supporting our journey to an inverted hierarchy.

# Environmental Best Practice
Volume 29

We're immensely proud of our partnership with FareShare UK and have achieved a significant milestone, donating 10,000,000 meals.


## IN DETAIL

As the UK's leading wholesale food supplier, we employ 8,500 colleagues across 35 locations, and as a purpose-led business, we're committed to advancing sustainability across the foodservice industry. Our Sustainability Ambassadors are armed with tools to support every customer who wants to embark on their own sustainability journey, and our partners ACM support us to minimise the impact our waste has on the environment. To deliver impactful change, we need the support of stakeholders across our business. Increasingly we've seen customer conversations beginning with 'what about sustainability?' So, it's important that our sales teams can do more than hold a general conversation about sustainability, they must be able to help direct them towards a more sustainable plate.

We wanted to engage our teams to understand sustainability and give them the confidence to introduce it into customer conversations. Our solution to this problem? To embark on the most ambitious training programme that the sector has seen; offering training to every colleague in the company from the warehouse to the boardroom. We didn't want generic, off-the-shelf training, opting to invest in a bespoke programme to really move the needle. Backed by the Brakes and Sysco GB board, who have thrown their full support behind the initiative.

With the increasing importance to customers, the training was initially undertaken by frontline sales colleagues, delivered through online training sessions presented live by experienced trainers. In addition, all our development chefs received enhanced Level 2 training. This was face-to-face training to understand the main challenges for a sustainable food system at every stage of the food chain and how to apply that to the latest thinking on plant-forward and healthy, sustainable dishes. Combining the engagement project with a comprehensive review of our own waste generation behaviours has led to extraordinary improvements in our environmental credentials over the past few years. Our larger sites are audited twice yearly, and the remainder of the estate annually. Bespoke improvement plans are created in agreement with site management teams and the information is channelled back to Emily Pinkney, Sustainability Manager for Sysco GB.

### Why did we do it?

In the past few years, we've increased our focus on our environmental credentials; recognising that we have a responsibility to work collaboratively with our suppliers and our customers to ensure we reduce our impact on the environment. There has been increasing media focus, with Blue Planet 2 and plastic pollution, but also on areas such as child poverty, modern slavery, palm oil, nutrition, and obesity. This project is one of many that positively impact the planet pillar of our strategy. Others include: Our 2ZERO20 pledge, all hard black plastics have now been eliminated from all Brakes brand products. Replacing our buffet boxes with smaller unlidded recyclable buffet boxes (saving 5 tonnes of virgin cardboard each week).


**What did it cost us?**

Our waste-related spend for 2023 is 5.7% higher than the cost per tonne in 2019. Whilst this means that increasing recycling has cost us money, the figure doesn't account for the annual price increases associated with waste management. When you consider the cost mitigation by reducing, reusing and recycling more than ever before, the reality is that not doing this project would have cost us significantly more money in the long run.

**What are our Quantifiable Achievements?**

As has already been highlighted in this application, our total waste arisings have decreased when you compare our baseline (pre-covid) year of 2019 against 2023. 17,150 tonnes = 4.006 tonnes per £M turnover in 2019 and 16,431 tonnes = 3.400 tonnes per £M turnover in 2023. Changes in our overall expenditure for waste are negligible. Not only have we mitigated against increases generally associated with waste management, but we've also invested heavily in upgrading compactors and balers to support our teams to maximise source segregation of recyclable materials.

Also, as part of our commitment to people and planet, we've identified that of the 63 suppliers that collect our waste, 84% of all services are done through Micro, Small or Mid-sized businesses. By utilising local supply chains we're limiting the distance our waste travels and supporting localised circular economies.

**How are others benefiting from our knowledge?**

We actively look to share best practice with others. In recent months, Pete Statham, Head of Sustainability & Government Relations, has been speaking at events such as: Knowledge Exchange, Edie 24 conference, Planet Peach 20/20, Footprint Forum. We're also a member of the Zero Carbon Forum (driving collaborative action in the hospitality sector) and a Leading Food Partner with FareShare.

**What are our future development plans?**

Globally, Sysco is committed to leading the foodservice distribution industry to reduce our emissions and bring these solutions to scale. Our goals include: Donate £10,000,000 (food, monetary donations and volunteering time) of good to communities to support children who live with poverty and social isolation by 2025. Work with suppliers representing 67% of Scope 3 emissions* to set science-based targets by 2026. Reduce our Scope 1 & 2 emissions by 27.5% by 2030. Transition to 100% renewable energy by 2030. Expand the Sysco Sustainable Agriculture program. Divert 90% of global operations and food waste from landfill. *Focusing on purchased goods and services and upstream transportation suppliers.

**What other awards have we gained?**

Our M&J seafoods team won the 2022 Footprint Innovations in Packaging Award. Our Brakes team won the 2023 Footprint Environmentally Efficient Logistics Award and the prestigious accolade of Sustainability Champions by the British Institute of Innkeeping (BII).

# TRAFFORD CENTRE & JOHN O'CONNER

## TRAFFORD CENTRE – MANCHESTER

### INTRODUCTION

The project at Trafford Centre aimed to preserve and enhance Wilderspool Woods through comprehensive environmental initiatives. Key aims included:

1. **Biodiversity Preservation:** Install bird and bat boxes, create hibernacula for wintering animals, and establish bee hives to support local wildlife and pollinator populations.
2. **Habitat Improvement:** Enhance ponds to improve water quality and attract geese, and construct bug hotels from discarded logs to support beneficial insects.
3. **Educational and Recreational Spaces:** Develop a reflection area in memory of a former team leader and provide serene woodland paths and picnic spots for visitors.
4. **Continuous Ecological Management:** Conduct regular tree surveys and engage a Sustainability Officer to guide ongoing improvements and maintain ecological health.
5. **Community Engagement:** Foster a serene, educational retreat for visitors and provide an accessible green space for recreation and nature appreciation.
6. **Economic Support:** Produce and sell honey from on-site bee hives to support local food banks, thereby contributing to the local economy and community welfare.
7. **Sustainable Development:** Implement future plans for seasonal bulb planting, butterfly attraction strategies, and continuous pond ecosystem enhancements, ensuring long-term environmental resilience and sustainability.

The project at Trafford Centre focused on a comprehensive environmental enhancement initiative in Wilderspool Woods, aiming to preserve and enrich this natural woodland. Key achievements include:

**Sustainable Development**

Installation of bird and bat boxes, creation of hibernacula, establishment of bee hives, and construction of bug hotels significantly boosted biodiversity and ensured long-term ecological health. Regular tree surveys and expert guidance from a Sustainability Officer underscored the commitment to continuous improvement and sustainability.

**Economic Impact**

Bolstered the local economy by producing and selling honey, which funded local food banks. Enhancing the woodland's appeal also increased visitor numbers, potentially boosting retail and leisure spending at the Centre.

**Environmental Preservation**

Improved habitats for birds, bats, bees, and aquatic life. Pond enhancements improved water quality, attracting geese and supporting diverse species. Wildflower and seasonal bulb planting supported pollinators and added aesthetic value.

**Community and Visitor Benefits**

Visitors enjoyed enhanced natural environments, serene woodland paths, picnic spots, and a reflection area. Informational points increased environmental awareness. The local community gained an accessible green space for education and recreation, fostering community pride and engagement.

**On-site Team Development**

Enhanced workforce skills and team dynamics through staff integration and promotion, improving overall effectiveness.

## IN DETAIL

The Trafford Centre project focused on an extensive environmental enhancement initiative to preserve and enrich Wilderspool Woods. Beginning with a thorough site assessment and ecological analysis, a detailed improvement plan was developed. Key actions included installing bird and bat boxes for local wildlife, creating a hibernaculum for wintering animals, and setting up six beehives to support pollinators. Pond improvements were made to enhance water quality and attract geese, while bug hotels from discarded logs supported beneficial insects. A reflection area was created in memory of a former team leader. Regular tree surveys were conducted, and a Sustainability Officer was engaged to guide further improvements. Future plans involve seasonal bulb planting, ongoing support for bees, butterfly attraction strategies, and continued pond ecosystem enhancements.

**Why this project?**

We took on this project to help honour its long-standing commitment to conservation and to elevate the natural beauty and biodiversity of Wilderspool Woods. Recognising the woodland's rich historical roots and ecological significance, we wanted to work with the Centre to provide a serene, educational retreat for visitors while preserving and enhancing the habitat for various species.

The initiative also sought to address previous management challenges and build a resilient, knowledgeable team capable of sustaining the site's ecological health. By implementing these improvements, we are striving to create a lasting positive impact on the environment, support local wildlife, and offer a meaningful, engaging natural experience for all staff and visitors.

**The cost**

All the following costs were covered by Savills/ Trafford Centre:

- Initial survey £3.5k
- Planting & ecological features circa £5k
- Wildflower meadow circa £1.5k
- Bee hive £10k (install and maintenance) 6 hives

The project achieved significant advancements in sustainable development, economic benefits, and environmental preservation:

- Sustainable Development
  Initiatives like bird and bat boxes, hibernacula, bee hives, and bug hotels fostered long-term ecological health, preserving biodiversity and ensuring woodland resilience. Advice from the internal JOC Sustainability Officer highlighted our commitment to continuous improvement and sustainability.

- Economy
  The project bolstered the local economy by producing and selling honey from on-site bee hives, supporting local food banks. Investment in the woodland enhanced Centre's appeal, potentially increasing visitor numbers and boosting retail and leisure spending.


- Environment
  The project improved habitats for birds, bats, insects, and aquatic life. Pond enhancements improved water quality, attracting geese and supporting aquatic species. Planting wildflowers and seasonal bulbs supported pollinators and added aesthetic value, while regular tree surveys and educational points increased visitor awareness of local wildlife.

**The benefits**

The environmental enhancement project brought significant benefits to wildlife, visitors, the local economy, the on-site team, and the broader community.

- Wildlife
  Birds, bats, bees, and aquatic species benefited from improved habitats like bird

and bat boxes, hibernacula, and bee hives, supporting population growth and diversity.

- Visitors
  Enhanced natural environments, serene woodland paths, picnic spots, and a reflection area improved visitor experience. Informational points increased environmental awareness.

- Local Economy
  The project attracted more visitors, boosting retail and leisure spending. Honey sales from on-site bee hives funded local food banks, supporting community welfare.

- On-site Team
  The project enhanced workforce skills through staff integration and promotion, improving team dynamics and effectiveness.

- Community
  The local community gained an accessible green space for education, recreation, and nature appreciation, showcasing the Centre's commitment to sustainability.

**Longer term benefits**

The long-term benefits of the environmental enhancement project are extensive and impactful. Ecologically, it ensures a sustainable and resilient ecosystem, supporting diverse wildlife populations through bird and bat boxes, bee hives, and hibernacula. Regular tree surveys and wildflower planting maintain biodiversity and woodland health.

Educationally and recreationally, it offers ongoing opportunities for environmental education and provides serene spaces for visitors to enjoy nature. Economically, it attracts more visitors, boosting retail and leisure spending, while honey sales support local food banks.

For the Community, it provides an accessible green space, reinforcing the Trafford Centre's role as a responsible, environmentally conscious entity, fostering community pride and engagement. Overall, the project solidifies a commitment to sustainability and environmental stewardship.

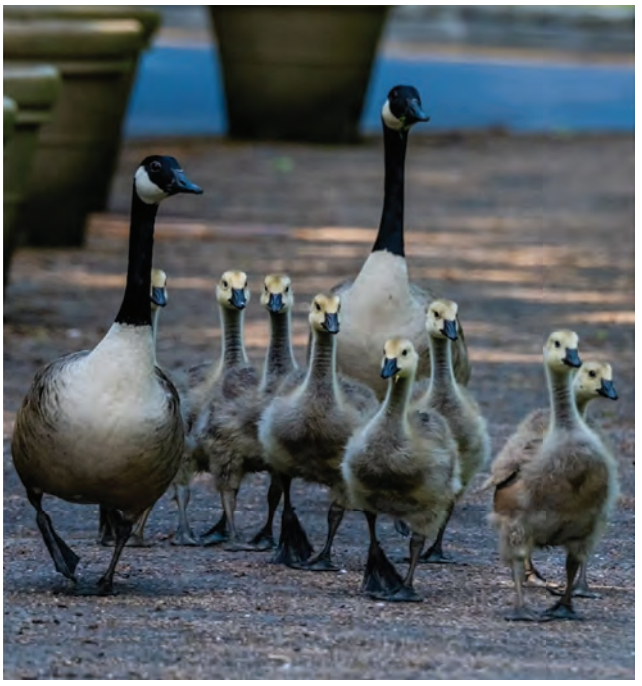
**Project innovation**

The environmental enhancement project incorporated innovative approaches to sustainability and ecological conservation.

- Holistic Ecological Assessment
  Thorough site assessments and ecological analysis ensured a scientifically grounded, effective improvement plan.

- Beehive Initiative
  Introducing bee hives and planting wildflowers supported pollinators and integrated conservation with community benefits, as honey sales funded local food banks.

- Reflection Area
  A reflection area in memory of a former on-site lead created a meaningful space for relaxation and community connection,



blending emotional significance with environmental enhancement.

- Comprehensive Biodiversity Support
  Regular tree surveys, strategic planting, and continuous involvement of a Sustainability Officer ensured a dynamic approach to sustaining and improving woodland biodiversity and health.

**Can others benefit from these methods?**

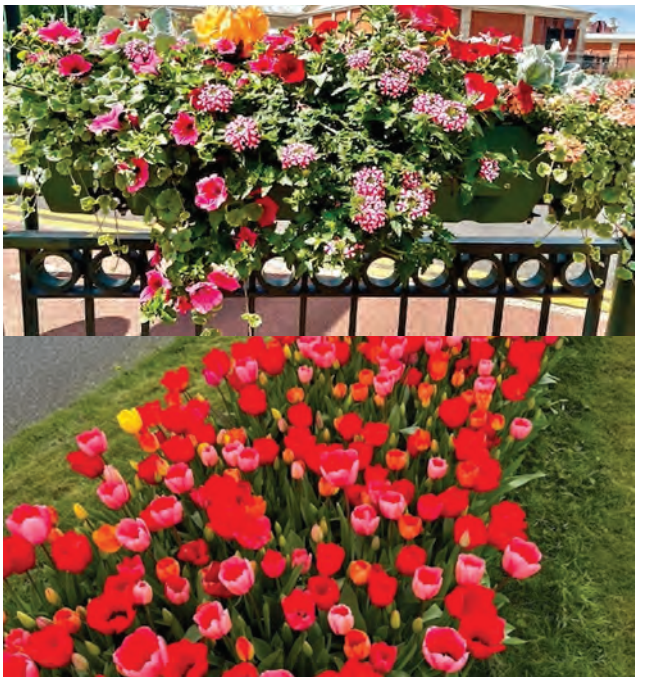
The Canada Pension Plan Investment Board (CPPIB) can use Trafford Centre as a case study to guide other shopping centres in implementing environmental initiatives. By documenting the project's comprehensive assessment, strategic planning, and practical methods like bird and bat boxes, bee hives, and bug hotels, CPPIB can provide a replicable blueprint. Highlighting economic benefits, community support, and ecological improvements showcases the tangible outcomes. Sharing metrics, visual materials, and facilitating knowledge-sharing forums can inspire and educate other centres, fostering a culture of sustainability and environmental stewardship across CPPIB's portfolio.

**Lessons learned and further developments**

From the environmental enhancement project, we learned the importance of thorough site assessments and expert ecological input for effective planning. We discovered that habitat creation, such as installing bird and bat boxes and creating hibernacula, significantly supports wildlife. The success of the bee hives showed that environmental initiatives can also provide economic and community benefits. We learned that sustainable practices and continuous monitoring are essential for long-term success, and that integrating educational and recreational elements can enhance visitor experiences and environmental awareness. These insights demonstrate the value of a comprehensive, adaptable approach to environmental stewardship. Going forwards, our Sustainability Officer, Peter, will continue to attend site to conduct surveys and suggest additional recommendations.

**Relevant accreditation or awards**

In 2024, Trafford Centre applied for Northwest in Bloom and are currently awaiting to hear the outcome.



# TRUSTGREEN

## BIODIVERSITY NET GAIN (BNG) READY

### INTRODUCTION

Trustgreen are dedicated to fostering and promoting sustainable practices. Our commitment to Biodiversity Net Gain (BNG) and enhancing the environment has positioned us as leaders within the Open Space Management / Stewardship industry.

Since it was made mandatory through the Environment Act 2021, Trustgreen has been making the necessary preparations to ensure that we are BNG-ready. By incorporating BNG principles into our projects, we are making a positive contribution to local ecosystems. Our goal is not only to meet standards but also to set new benchmarks for environmental stewardship. We believe in safeguarding the environment in perpetuity for future generations - it's the right thing to do.

Through our commitment to Biodiversity Net Gain, we are actively helping to safeguard native habitats and help combat the biodiversity crisis, for the benefit of the local community and the wildlife it supports.

Our BNG-Ready project achievements so far include:

- A dedicated in-house BNG & Habitat Ecologist and sustainability team.
- Successful pilot testing projects for retrospective biodiversity net gain assessments to demonstrate what can be achieved on existing developments.
- The creation of a CPD course providing a comprehensive introduction to BNG, covering its definition and related legislation; the process and management; and how it affects different stakeholders.
- Community Engagement events for greater community awareness of the unique habitats on our resident's doorstep, helping to achieve community buy-in which is crucial for the long-term success of BNG.
- Leading through knowledge as part of CIRIA Biodiversity Community Practice Group – a platform for biodiversity practitioners to share knowledge and build capacity.
- Part of the Stakeholder Engagement Panel with FPCR and Natural England.
- Trustgreen also engaged with Natural England throughout their BNG scoping exercises.

### IN DETAIL

As part of our commitment to the Biodiversity Net Gain (BNG) framework, we are actively working to enhance the natural environment. Trustgreen's efforts extend beyond compliance as we aim to exceed expectations. By incorporating BNG


principles into our projects, we are making a positive contribution to local ecosystems. Our goal is not only to meet standards but also to set new benchmarks for environmental stewardship.

Our success is built on our commitment to leading through knowledge. Our team is continually learning, keeping us at the forefront of environmental advancements and up-skilling. We currently offer CPD BNG training courses both in-house to our various Trustgreen teams and also externally for professionals within the industry. This approach ensures that our teams have an awareness of BNG and that we, as a company, are BNG-ready. Our BNG CPD training course covers the entire BNG journey, from legislation to management and monitoring, providing a comprehensive understanding of BNG and its benefits to our built and natural environment. We also believe in sharing knowledge with our industry peers and offer this CPD course externally to our clients. This not only improves us as a business but enables us to bring others along with us.


We have piloted BNG on several of our sites, including Wimblebury, Abbey Gardens, and The Paddocks, to showcase our ability to carry out a BNG study from habitat classification to the use of metrics, demonstrating tangible results. We chose sites with various habitats and urban settings, from amenity green space at Wimblebury, and wildflower meadows at The Paddocks, to wetlands and wet woodlands at Abbey Gardens. This is to conduct our case studies with our ecology team and demonstrate our ability to undertake BNG in various settings. Our management and monitoring practices across our various sites are transparent and data-driven, and we encourage others to adopt similar practices.

Our pilot study at Wimblebury has played a significant role in our BNG journey here at Trustgreen. The site is located in an urban area in Cannock, consisting of amenity grassland, ditches, woodland, and a wildlife pond. We partnered with ecological experts to scope out the potential for biodiversity uplift on the applicable land using the Biodiversity Metric from the current baseline. We conducted a comprehensive BNG study on-site and processed the data through the metric.

The results showed that we could increase biodiversity by 14% by making simple changes that work with the existing habitats to minimise any impacts as much as possible by following the mitigation hierarchy. This is significant, as it would exceed the mandatory 10% uplift in biodiversity that would be required if this was a new development. We found that achieving this could be done by implementing a less intensive management regime that works more holistically with nature, promoting higher biodiversity, and creating species-rich habitats. We have a BNG habitat management

and monitoring plan in place for this site and the others, ready to implement these changes that will benefit both the local wildlife and the community.

We are also implementing the use of QR codes across all our live sites that will be embedded within the site maps and management plans. They will provide our maintenance teams with site-by-site information on the required maintenance for each area of a site. This will help reduce and avoid mismanagement and improve the quality and condition of the habitats that we are responsible for.

Community engagement is at the heart of our practices as we believe in the importance of connecting people with nature and the wildlife on their doorsteps. This will continue to be an important part of our business with BNG. That is why we invest in providing resident engagement days at various sites, where we discuss with residents the green spaces on their developments, why they are important, and what wildlife they may see in these habitats. It helps raise awareness among people about the different habitats around them, why they look a certain way, and why they are managed in a particular way. It highlights the importance of being out in nature and emphasises that we are also a part of nature; hence, we should take care of our environment.

Trustgreen's journey toward sustainability is marked by community engagement, knowledge leadership, impactful case studies, and a steadfast commitment to BNG readiness. If implemented correctly and embraced, BNG could improve developments, provide more open green space, reconnect people with nature, and strengthen the protection of England's most rare and valuable habitats. We will continue to strive to be innovative with our practices, always evolving and aiming to improve. We hope to inspire others to join us in safeguarding our planet.

# TUSKER

## THE GREEN CAR SCHEME

### INTRODUCTION

Tusker aim to minimise the impact of driving a car on the environment. We're committed to educating drivers about the choices they have to drive a greener, cleaner car. Offsetting the emissions that a vehicle emits, whether from tailpipe emissions in the case of petrol or hybrid cars, or from potential charging emissions from electric cars, is one way to do that. We have recently changed our project focus to ensure that we are not only reducing the carbon we are putting into the atmosphere, but also removing it altogether. More than 80% of our cars are now electric, with a further 14% hybrid electric cars, following our education of our drivers about how an electric car could work for their lives. Our offsetting has been overhauled to not only reduce the carbon in the atmosphere, but also remove it altogether where possible. These are worldwide projects, supporting some vulnerable communities, but also with the addition of the UK tree buddying project, it means that the quality of our air and our reversal of the loss of UK forests, can also be addressed.

### IN DETAIL

**What did the project involve doing?**

All salary sacrifice cars have the tailpipe and EV charge emissions offset, based on mileage, term, and CO2 of the car. For electric cars, the offsetting is based on mileage, term, battery capacity, and range. In 2024, the average monthly offsetting for delivered cars in a month is an average of 6000 tonnes, so

this is a significant amount of carbon which we are committed to removing from the atmosphere. We have been working with the Carbon Footprint organisation since 2013, offsetting the emissions of the cars we put on the road, as well as those created by our office operations. Since January 2024, we have been undertaking a full review of the offsetting available to us, completing a full tender exercise with six organisations offering this service. We had a strict criterion to fulfil – an organisation which would provide high-quality projects in accordance with the Slyvera rating system and our sustainability team's objectives, while also offering UK tree planting, as this is something we were keen to continue to include, as well as international projects which support vulnerable communities across the world.

**Why did you do it?**

Tusker is a founding member of the EV100 and World EV Day, demonstrating our commitment to responsibly providing cars for drivers in the UK. We have been committed to reducing our environmental impact since 2010 and have been offsetting our fleet since 2013. The offsetting initiative with The Carbon Footprint organisation has focused on the reduction of carbon in various VCS accredited initiatives and has worked well for us since 2013. However, in 2023, our fleet size suddenly doubled, meaning that we were responsible for 40,000 vehicles in the UK, all of which were offset, either their emissions from the tailpipe, or for charging, or a combination of both. This meant that we needed to find a new way of not only reducing the carbon, but also removing it altogether, as suddenly our impact could be a lot more significant.

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

All of our offsetting is fully funded in our project costs, ensuring that all driver mileage is taken into consideration, and a buffer is included should a driver leave their contract early.

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

The project with the Carbon Footprint organisation has offset more than 340,000 tonnes of carbon. In 2024 so far, we have offset more than 6000 tonnes each month, and with our fleet expanding, we expect this to grow significantly over the next few years. One of the new offsetting projects, which is focused on removing carbon from the atmosphere, is a grasslands project outside Zhangye City, which is in the northwest Gansu province in China, where the Qinghai Tibet Plateau and Mongolia Plateau meet.

The project's aim is to restore the local degraded grassland ecosystem by seeding grass and building fences on the degraded grassland, increasing carbon sequestration, and contributing to local development by introducing sustainable grazing and management of grassland. 261,059.80 ha of degraded grassland is now managed scientifically, reducing soil desertification and restoring grassland vegetation to improve soil carbon storage and local biodiversity through grassland management measures. The project is estimated to generate GHG emission removals of 29,440,243 tCO2e in 40 years, with an average annual GHG emission removal of 736,006 tCO2e.

We will continue to work with projects that reduce the amount of carbon as well. These include the Reducing Emissions from Deforestation and Forest Degradation project (REDD project) in Brazil. This project is being developed and registered under the Verified Carbon Standard (VCS) and the Climate, Community, and Biodiversity Standard (CCBS). We will also work with the REDD+ Project Resguardo Indígena Unificado–Selva de Mataven (REDD+ RIU-SM) in Colombia, which aims to develop a participatory process to achieve the establishment of an integrated management system of forests and lands of the reserve, to ensure its sustainability and to mitigate threats to its conservation, particularly avoiding deforestation.

Our Tree Planting projects are paired with Verified Carbon Standard (VCS) approved carbon credits to guarantee the carbon offsetting. This provides robust offsetting, together with all the biodiversity and community benefits that tree planting brings. This involves planting across all 12 regions of mainland UK, Northern Ireland, and the Republic of Ireland. Tree species planted vary from season to season, but all the trees include native broadleaf varieties, such as Hawthorn, Sessile Oak, Hazel, Downy Birch, Guelder Rose, Field Maple, Rowan, English Oak, Blackthorn, and Wild Cherry.

**Was there anything innovative about the project?**

We continue to be the only leasing organisation that offsets the emissions for its vehicles, despite this being true for the past 11 years. Continually reviewing the offsetting available and ensuring that it is the best possible option is part of our commitment to minimising our impact on the environment. The recent changes to the project have been managed internally, on top of the team's daily workload, as part of that commitment, and to demonstrate that this is more than just a simple PR initiative; it is something that is at the core of the company.

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