

HARWELL CAMPUS

***SUSTAINABILITY
IMPACT REPORT
2022***

“TANGIBLE ACTION FOR A GENUINE DIFFERENCE”





FOREWORD

As we navigate through the challenges of our rapidly changing world, the importance of sustainability has become increasingly evident. At H^rwell, we believe that sustainability is not only the right thing to do, but also essential for our long-term success as a Campus.

This report outlines our progress in the past year towards achieving our sustainability goals, demonstrating our efforts to create positive change. We are proud of the progress we have made so far, but we know there is still much more to do.

We would like to thank our stakeholders for their continued support and feedback as we strive towards a more sustainable future.

Stuart Grant

H^rwell Chief Executive Officer





PREFACE

We have entered a new era which will drive innovation for a more sustainable way of living, and Harwell Campus will be at the forefront of this revolution.

However, alongside emerging technological solutions, we must focus on our own behaviours and practices, as individuals, as an organisation and as an industry, to minimise the negative environmental and social impacts of our activities and transform them into opportunities for positive change.

This Annual Sustainability Impact Report demonstrates our efforts for tangible and meaningful action that will make a genuine difference.

We are on a journey, and this is only the beginning.

Emmanuel Deschamps

Harwell Sustainability Manager





EXECUTIVE SUMMARY

H^rwell exists to provide a world-leading campus for science, technology, & innovation, and the Climate Emergency demands that we provide the most sustainable buildings & infrastructure to enable sustainable growth.

This Sustainability Impact Report provides an insight into H^rwell journey throughout 2022 to deliver a **Campus Fit for the Future**, with a focus to turn our sustainability vision into tangible and meaningful action.

2022 HIGHLIGHTS



We developed our Sustainability Vision, Policy and Strategic Objectives and applied our Green Building Assessment Method.



We measured our portfolio GHG emissions baseline, defined our 2030 carbon reduction targets and procured electricity backed by renewables.



We contributed to biodiversity enhancement projects, whilst increasingly connecting people with nature on Campus.



We received over 1,000 responses to our travel survey, the results showing a positive trend towards lower emission commuting choices.



We promoted employment of young people and contributed to inspire the next generation, whilst supporting local charities.



We installed a network of real-time indoor air quality monitoring sensors within our office, delivered public art projects and offered free yoga classes.



We advanced our standards to deliver sustainable buildings through our supply chain and exported Zero Waste to Landfill from our managed buildings.

“At H^rwell, we have a vision to develop a sustainable campus for world-class science & innovation, and to be recognised as a catalyst for sustainable growth.”





OUR VISION

At Harwell, we have a vision to develop a sustainable Campus for world-class science & innovation, and to be recognised as a catalyst for sustainable growth.





OUR POLICY



SUSTAINABILITY POLICY STATEMENT

At ARC, we have a vision to develop sustainable clusters for world-class science and innovation, and to be recognised as a catalyst for sustainable growth.

Stuart Grant

Chief Executive Officer (CEO)

Jim Stretton

Chief Finance Officer (CFO) &
Chief Operations Officer (COO)

To put our vision into action, we will:

Address environmental and social impacts by

- Complying with all relevant legislation, obligations, requirements and standards
- Identifying our environmental and social impacts and managing significant risks and opportunities
- Setting objectives and targets to monitor and continually improve our sustainability performance
- Empowering our employees with relevant sustainability knowledge, skills and competence
- Communicating our sustainability policy to employees and stakeholders

Develop and operate sustainable and resilient assets by

- Transitioning our portfolio towards Net Zero Carbon
- Protecting the natural environment and managing our landscape sustainably, enhancing its ecological diversity whilst creating a network of green spaces for people and nature
- Shifting the development and operation of our portfolio towards a circular economy, maximising the value of materials and natural resources whilst avoiding waste
- Making our buildings and infrastructure resilient to changes in climate
- Encouraging active travel choices and promoting low emission transport options
- Providing an environment that safeguards and enhances the health and wellbeing of staff and visitors

Make a positive contribution to communities and the local economy by

- Inspiring tomorrow's workforce through apprenticeships, placements and work experiences
- Investing in Science, Technology, Engineering and Mathematics (STEM) opportunities for young people
- Boosting local employment and encouraging the procurement of goods and services from local businesses when possible
- Supporting local community groups and charities

Make sustainability a core part of our business by

- Maintaining strong stakeholder relationships on sustainability matters through active engagement
- Ensuring that our stakeholders' sustainability ambitions are an integral part of our business decisions



KEY FOCUS AREAS

To put Vision into Action, ARC has identified 7 Key Focus Areas, aligned with the UN Sustainable Development Goals (SDGs), as the guiding principles for a successful, prosperous, and sustainable business.



**CARBON &
GHG EMISSIONS**



**NATURE &
ENVIRONMENT**



**MATERIALS &
SUPPLY CHAIN**



**CLIMATE RESILIENCE
& ADAPTATION**



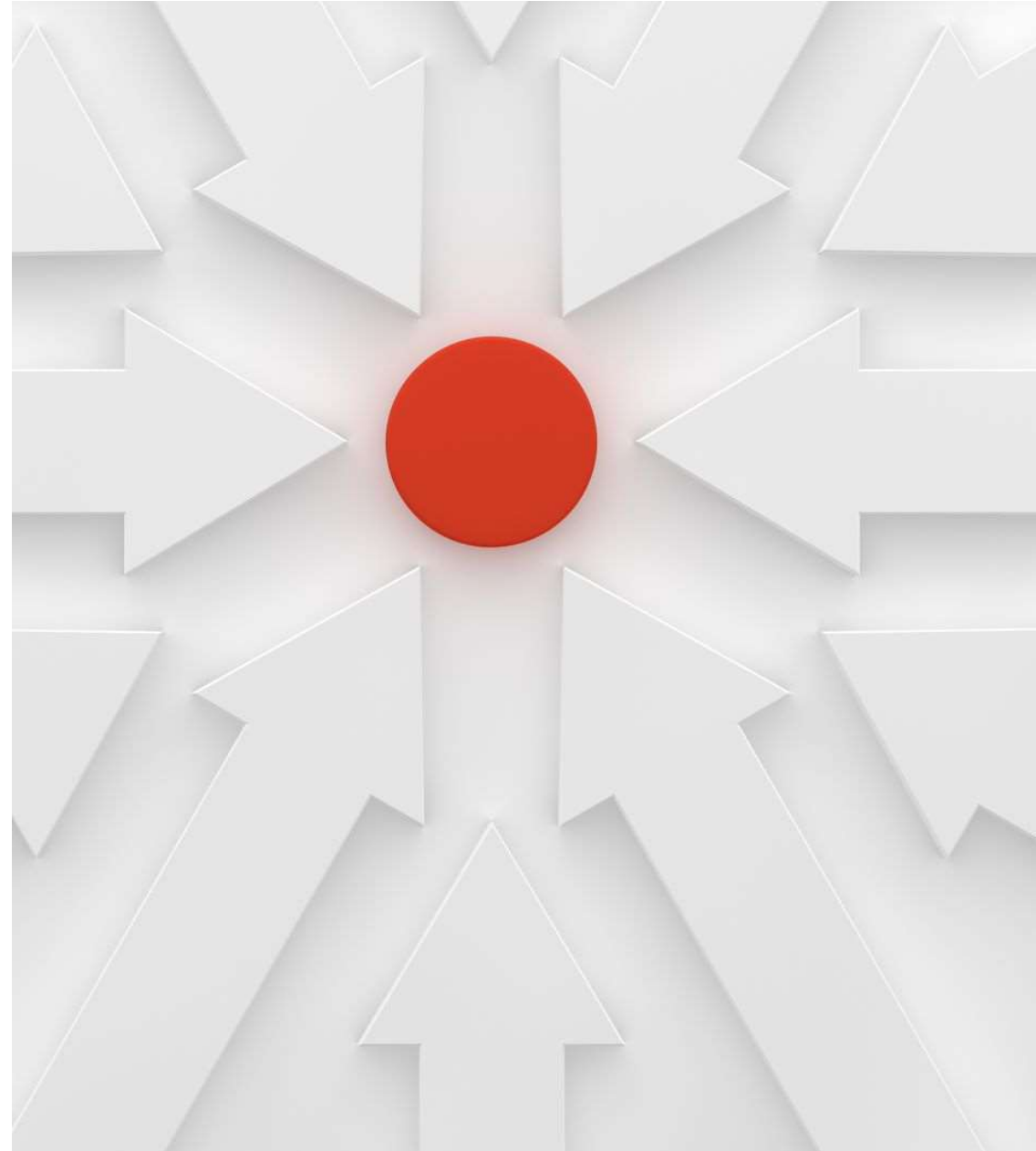
**CONNECTIVITY &
TRANSPORT**



**HEALTH &
WELLBEING**



**COMMUNITY &
LOCAL ECONOMY**





OBJECTIVES



CARBON & GHG EMISSIONS

Transition our built environment portfolio towards Net Zero Carbon, halving emissions from managed buildings by 2030.



NATURE & ENVIRONMENT

Protect the local environment and manage our estate sustainably, enhancing biodiversity whilst creating a network of green spaces for people & nature.



MATERIALS & SUPPLY CHAIN

Shift the development & operation of our portfolio towards a circular economy through sustainable procurement & responsible sourcing.



CLIMATE RESILIENCE & ADAPTATION

Make our buildings & infrastructure resilient to the predicted changes in the climate.



CONNECTIVITY & TRANSPORT

Encourage active travel choices and provide low emission transport options to commuters.



HEALTH & WELLBEING

Provide an environment that safeguards and enhances the safety, health & wellbeing of staff and visitors.



COMMUNITY & LOCAL ECONOMY

Make a lasting positive contribution to the community & local economy by delivering environmental, economic, and social value.



CARBON & GHG EMISSIONS

Transitioning our built environment portfolio towards Net Zero Carbon, halving emissions from managed buildings by 2030.



CARBON & GHG EMISSIONS

OBJECTIVE 1 - Transition our built environment portfolio towards Net Zero Carbon, halving emissions from managed buildings by 2030.

This will be achieved by:

- Developing and delivering low carbon buildings, with a focus on reducing upfront embodied carbon and operational energy demand
- Quantifying & reducing the carbon emissions from managed buildings
- Enabling the reduction of carbon emissions from leased assets, existing and future
- Driving the reduction of carbon emissions from the supply chain (goods & services)
- Facilitating the integration of on-site renewable energy generation (e.g., solar)
- Procure renewable electricity backed by Renewable Energy Guarantees of Origin (REGOs) and seek to procure energy from additional renewable sources through Power Purchase Agreement (PPA)
- Phasing out fossil fuel as primary energy source (e.g., natural gas, diesel)





OPERATIONAL CARBON – CORE ASSETS*

Reporting operational energy use

In 2022, we significantly improved on energy use reporting from all our buildings, in collaboration with our members.

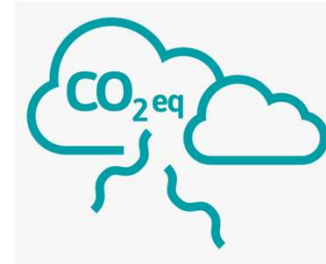
This will provide us with the Greenhouse Gas (GHG) emissions baseline to measure our progress against.



2,647,887
kWh



12,439,493
kWh



2,888,894
kgCO_{2eq}

To put the scale of these carbon emissions into perspective, it is roughly equivalent to:

- Heating 1,050 average UK homes

Energy Catapult Analysis shows that in 2017, the average household generated 2,745 kg of CO2 emissions from heating.

Source: <https://energysavingtrust.org.uk/significant-changes-are-coming-uk-heating-market/>

58
kgCO_{2e}/m²

*based on actual energy data from 19 buildings representing 49,591 m² or 533,793 ft² (GIA): B148, B150 (FRI), B151, B152 (FRI), B166, B168, B173 (FRI), B363, B465 (FRI), B587, HQ, Quad One, Gemini (FRI), Genesis, Dalton (FRI), Min-Ion (FRI), Element Six (FRI), Spectrum (FRI) and Zephyr (FRI)

*excluding Zeus, BEPO & Quad Two as below 50% occupancy in 2022

*excluding non-core assets: DiSH, Cricket Pavilion (FRI), Nursery (FRI), The Hides

GIA: Gross Internal Area

FRI: Full Repairing & Insuring



OPERATIONAL CARBON – MANAGED ASSETS*

Reporting operational energy use

In 2022, we renewed the energy contract for our managed buildings which includes renewable electricity backed by Renewable Energy Guarantees of Origin (REGOs).

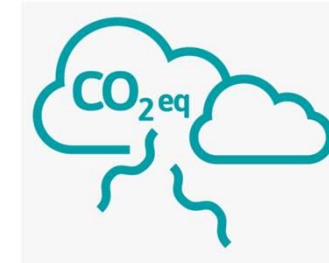
By 2030, we aim to halve GHG emissions per square metre for the buildings under our direct management.



1,256,637
kWh



1,953,039
kWh



607,065
kgCO_{2eq}

To put the scale of these carbon emissions into perspective, it is roughly equivalent to:

- Taking 280 round-trip flights from London to New York

Based on 0.19306kgCO_{2e} per passenger.km over 5,570km between London and New York (one way) = 1,075kgCO_{2e}

Source: <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022>

33
kgCO_{2e}/m²

*based on actual energy data from 9 buildings representing 18,216 m² or 196,075 ft² (GIA): B148, B151, B166, B168, B363, B587, HQ, Quad One & Genesis

*excluding Quad Two as below 50% occupancy in 2022

*excluding non-core assets: DiSH, The Hides

GIA: Gross Internal Area



OPERATIONAL CARBON – ARC*

Reporting operational energy use

For most of 2022, we occupied part of the HQ Building, heated using a conventional gas boiler.

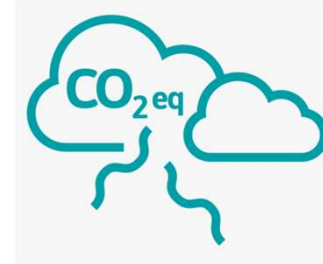
At the end of 2022, we moved to our new home, the All-Electric, EPC 'A' rated, Quad Two building!



52,727
kWh



12,371
kWh



12,017
kgCO_{2eq}

To put the scale of these carbon emissions into perspective, it is roughly equivalent to:

- Driving a diesel car for about 71,500 kilometres (44,700 miles)

Based on 0.168kgCO_{2e} per km (Medium car)

Source: <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022>

22
kgCO_{2e}/m²

*Based on office space within HQ Building occupied by ARC between November 2021 and October 2022 representing 539 m² or 5,802 ft² (Net Lettable Area).



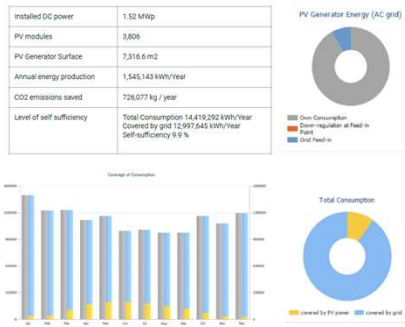
OPERATIONAL CARBON

Transitioning our portfolio towards Net Zero

In 2022, we continued paving our Net Zero Carbon Pathway:

- Delivering our 1st All-Electric, EPC 'A' building, including our 1st Ground Source Heat Pump (GSHP) system serving radiators in the common areas.
- Developing Campus-level and Building-level **Carbon Reduction Action Plans**
- Commissioning a **Rooftop Solar** feasibility study for existing buildings and developing the business model to enable a rollout programme
- Designing a **Battery Energy Storage System (BESS)** solution to provide off-grid hybrid power to DiSH
- Renewing our Energy Supply Contract to include renewable electricity backed by **Renewable Energy Guarantees of Origin (REGOs)**
- Integrating **passive design measures** as well as **Low & Zero Carbon (LZC) technologies** into our new developments to minimise their operational energy demand

Solar PV



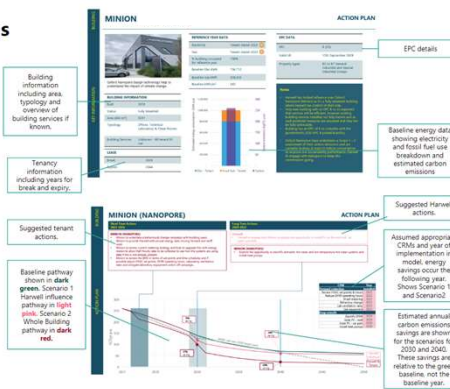
HARWEL



Building Action Plans

Overview
The following pages have action plans for each of the 19 buildings included in the study. Building Action Plans are intended to provide a concise summary of the key findings from the decarbonisation pathway analysis and to highlight the key recommended next steps.
It should be noted that as no energy audits were carried out the suggested carbon reduction measures (CRMs) for each building are based on typical practice and are intended to serve as an indication of the kind of measures that may be possible. Harwell may wish to use these as a starting point for their campus CRM programme and it is recommended that detailed surveys are carried out for each building to identify specific measures.

Contents of Action Plans
Building Action Plans are two pages. The first page provides an overview of key building information, lease agreements, EPC details, and estimated energy consumption for the reference year.
Page 2 provides the decarbonisation pathway for the building from 2021 to 2050 and shows the assumed applicable CRMs for the building, year of implementation and recommended next steps for Harwell and for tenants.
The impact of the CRMs can be seen visually on the pathway chart showing the estimated annual carbon emissions. **The WBC net zero carbon 2050 target pace shown on the charts is a 50% reduction in carbon emissions from the baseline year by 2030 and zero carbon emissions by 2050.** It is broadly comparable to a science based target reduction of 4.2% per year in the near term (i.e. up to 2030).



Quad Two

Harwell, part of **ARC**, a campus fit for the future & a catalyst for sustainable growth.

1. Biophilic interior design within the reception area, offering a sense of wellbeing on entrance
2. Ground Source Heat Pump serving radiators in the common areas using geothermal energy
3. Variable Refrigerant Flow (VRF) providing energy efficient cooling & heating to occupied spaces
4. Elevator with regenerative drive producing in-use electricity that can be transferred to the building
5. Highly efficient LED luminaires with intelligent lighting controls to reduce energy consumption
6. EPC 'A' Rating achieved by optimising the building fabric performance for energy efficiency
7. Energy efficient air handling units recovering exhaust heat in winter, and cool in summer
8. Improved indoor air quality through CO₂ sensors connected to mechanical ventilation
9. Wildlife-friendly external lighting designed to reduce night-time light pollution
10. Underground rainwater soakaway and permeable terraces preventing off-site discharge and associated flood risk
11. All electric building allowing the building to benefit from the UK grid decarbonisation
12. 50 spaces bicycle shelter with green 'podium' roof
13. A electric vehicle charging points enabling the transition towards low & zero carbon transport
14. Enhanced landscape design providing connections with nature and establishing a path in biodiversity
15. Light-coloured asphalt used on the car park around the building to reduce the urban heat island effect

Hawkins Brown | HOARE LEA | BIDWELLS | EXTERIOR ARCHITECTURE | rsk



EMBODIED CARBON

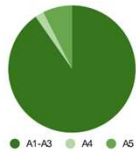
Transitioning our portfolio towards Net Zero

In 2022, we advanced our understanding of the embodied carbon impact of our new developments:

- Upfront Embodied Carbon & Lifecycle Embodied Carbon Assessments completed for:
 - Quad Two (Retrospective, 'As Built')
 - Zeus (Retrospective, 'As Designed')
 - Zeta (RIBA Stage 2 Concept Design)
 - Dexter (RIBA Stage 2 Concept Design)
 - Tech Edge 1 & 2 (RIBA Stage 3 Tendered Design)
- All the buildings are showing an Upfront Embodied Carbon in the 'Band D' range (above $600\text{kgCO}_{2\text{eq}}/\text{m}^2$ but below $<775\text{kgCO}_{2\text{eq}}/\text{m}^2$), using commercial office as benchmark in the absence of an equivalent for science & innovation buildings.
- Whilst these buildings are performing well against the BAU baseline defined by LETI ($1,000\text{kgCO}_{2\text{eq}}/\text{m}^2$), we will be aiming to minimise Upfront Embodied Carbon below $600\text{kgCO}_{2\text{eq}}/\text{m}^2$ by 2025 and towards $350\text{kgCO}_{2\text{eq}}/\text{m}^2$ by 2030.

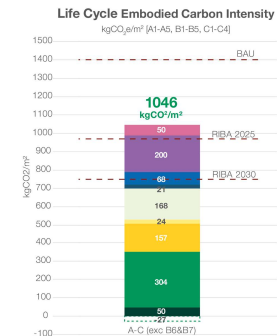
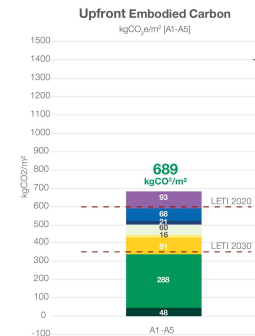
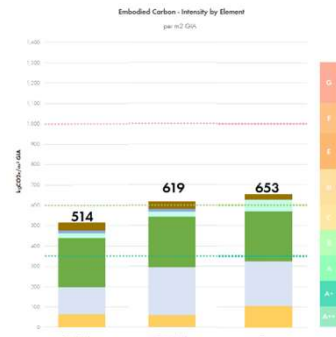
'Upfront' Embodied Carbon Emissions

A1-A3 Construction Materials	2,155.1 tCO2e
A4 Transportation to Site	52.8 tCO2e
A5 Construction and Installation	178.6 tCO2e
Total A1-A5	2,386.5 tCO2e
Total A1-A5	0.683 tCO2e/m2 GFA



'Upfront' Embodied Carbon Emissions

A1-A3 Construction Materials	2,174.1 tCO2e
A4 Transportation to Site	102.0 tCO2e
A5 Construction and Installation	183.7 tCO2e
Total A1-A5	2,459.8 tCO2e
Total A1-A5	0.677 tCO2e/m2 GFA



Upfront Carbon, A1-5 (exc. sequestration)

Band	Office	Residential	Education	Retail
A++	<100	<100	<100	<100
A+	<225	<200	<200	<200
A	<350	<300	<300	<300
B	<475	<400	<400	<425
C	<600	<500	<500	<550
D	<775	<675	<625	<700
F	<950	<850	<750	<850
G	<1300	<1200	<1100	<1200

Embodied Carbon, A1-5, B1-5, C1-4 (inc. sequestration)

Band	Office	Residential	Education	Retail
A++	<150	<150	<125	<125
A+	<345	<300	<260	<250
A	<530	<450	<400	<380
B	<750	<625	<540	<535
C	<970	<800	<675	<690
D	<1180	<1000	<835	<870
E	<1400	<1200	<1000	<1050
F	<1625	<1400	<1175	<1250
G	<1900	<1600	<1350	<1450

All values in kgCO_{2e}/m² (GIA)





NATURE & ENVIRONMENT

Protect the local environment and manage our estate sustainably, enhancing biodiversity whilst creating a network of green spaces for people & nature.

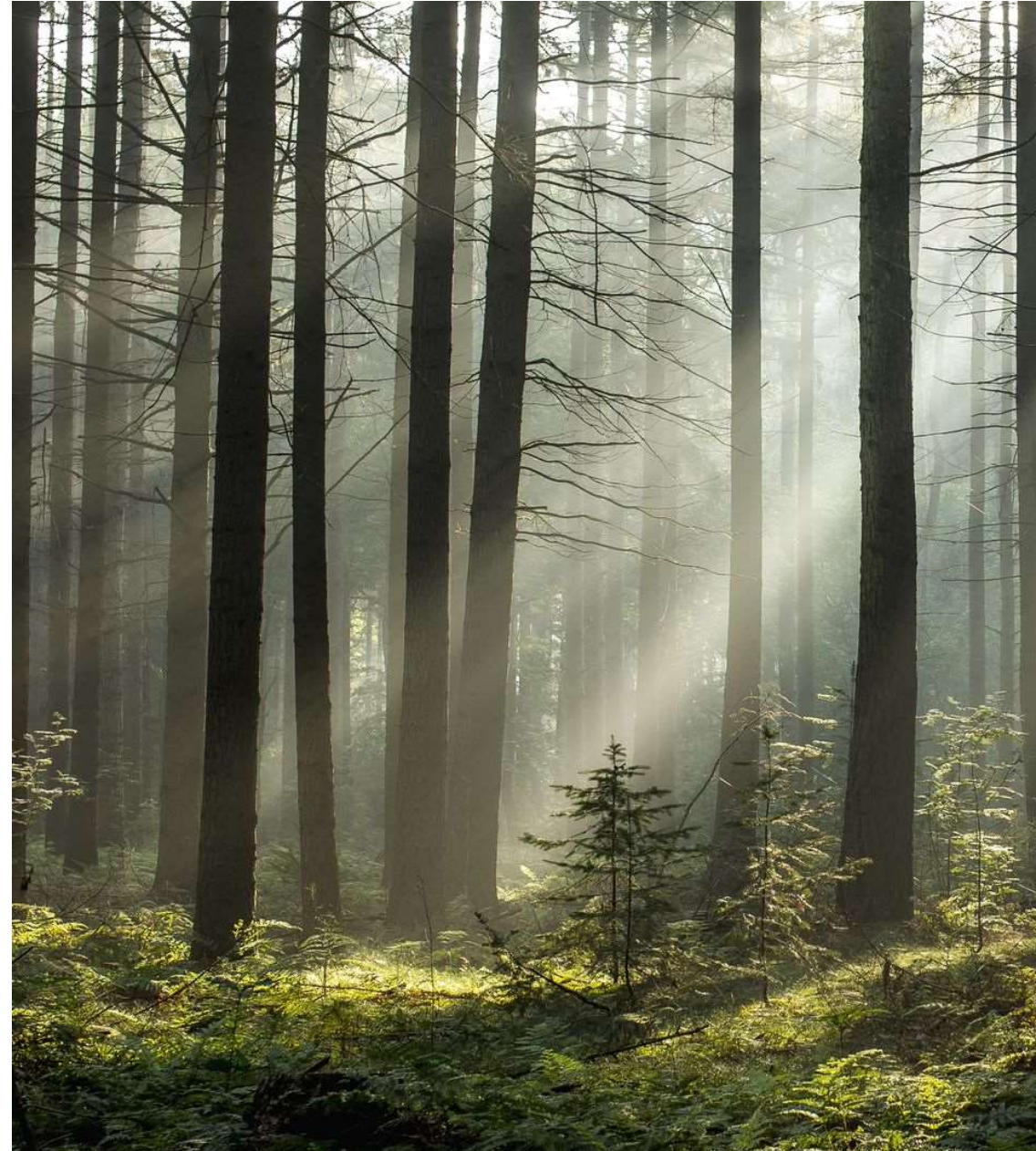


NATURE & ENVIRONMENT

OBJECTIVE 2 - Protect the natural environment and manage our estate sustainably, enhancing its biodiversity whilst creating a network of green spaces for people & nature.

This will be achieved by:

- Avoiding the loss of biodiversity and preserving trees
- Managing our landscape to maximise its biodiversity value
- Delivering new and improved ecological habitats on our Estate
- Securing significant biodiversity net gain through off-site contribution & partnerships
- Preventing air, land, and water pollution during construction & operation of our portfolio





BIODIVERSITY REPORT (2021)

Sustainable Landscape & Estate Management

In 2022, we published our 1st Biodiversity Report, showcasing what we had achieved in 2021, including:

- Wildflower meadows around the Quad Two development.
- Landscape design around HQ including climate resilient species, fruit trees and plants as well as a bug hotel.
- Zeus was designed and developed to maximise tree preservation and to integrate the nearby pond in its landscape setting.
- BEPO was connected to the natural habitats adjacent to the site through planting and wildflowers sowing.





RIDGEWAY GALLOPS BNG PROJECT

Woodland & chalk grassland creation



In 2022, we contributed to a Biodiversity Net Gain project less than two miles from the Campus.

The scheme will deliver:

- **1.2ha** of woodland creation including **15** mixed native species suitable for chalk soil eventually culminating in predominantly Beech as the climax species.
- **4ha** of species rich chalk grassland creation
- **1ha** of neutral grassland enhancement
- That's the equivalent of about **9** professional football pitches* being improved for nature.



*100m x 68m



PROJECT 'WHIP'

Woodland Habitat Improvement Project

In 2022, we delivered a woodland habitat improvement project, designed by Adam Frost.

The scheme introduces colour and structural habitat diversity around mature trees with layers of seasonal planting, creating areas for nature and people to enjoy.

Key Facts & Figures:

- One of the longest log habitat walls in England! This Hibernacula is **90** meters long, made of over **1500** linear meters of site-won timber which represents over **18** cubic meters of wood.
- **26,000** bulbs (all individually planted by hand), **2,500** perennial plants, **259** semi mature trees



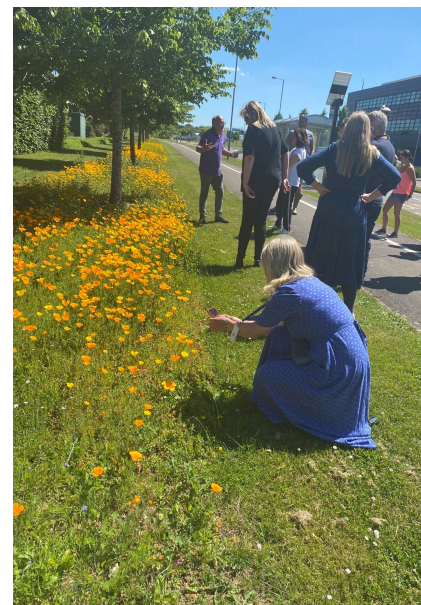


GREEN WEEK - NATURE & BIODIVERSITY DAY

Connecting People with Nature

In 2022, we organised our 1st ever Green Week with one day dedicated to Nature & Biodiversity, including:

- Virtual Talks on the University of Oxford Biodiversity Footprint, Oxfordshire Nature's Recovery, Biodiversity Net Gain and Green Infrastructure by Design
- Nature Walk & Talk showcasing the Campus rich landscape, featuring our resident beekeeper
- Portable living wall demonstrator equipped with a solar-powered watering system and connected to real-time outdoor air quality monitoring

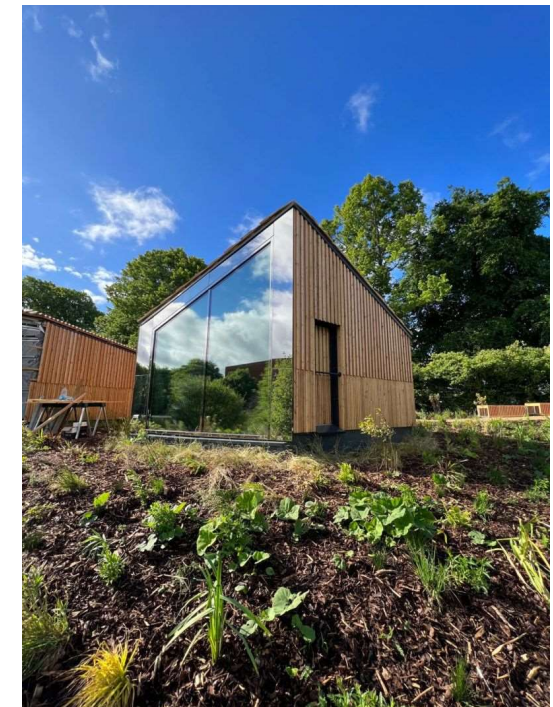




THE HIDES

Connecting People with Nature

In 2022, we built **The Hides** to offer a place of rest and reflection to Campus users, as well as a unique setting for meetings and social gathering, connecting People with Nature.



The Hides

Harwell, part of **ARC**, a campus fit for the future & a catalyst for sustainable growth.

- 1 A place of rest and reflection offering a unique setting for meetings
- 2 Enhanced landscape & biophilic design providing a strong connection with nature
- 3 All electric buildings allowing them to benefit from the UK grid decarbonisation
- 4 Solar LED external lighting with motion sensor integrated into the landscape to minimise electricity consumption
- 5 Lower embodied carbon through the use of a timber frame and timber cladding
- 6 Responsibly sourced timber (PEFC) used for the cladding and structural materials
- 7 Natural ventilation by way of an internal opening to invite fresh air into the room
- 8 Off-grid wastewater treatment plant allowing discharge of clean water into the nearby waterbody

BELL PHILLIPS ARCHITECTS | BIDWELLS | Barnwood | EXTERIOR ARCHITECTURE





CONNECTIVITY & TRANSPORT

Encourage active travel choices and provide low emission transport options to commuters.



CONNECTIVITY & TRANSPORT

OBJECTIVE 5 - Encourage active travel choices and provide low emission transport options to commuters.

This will be achieved by:

- Making green travel options available to Campus staff and visitors (e.g., public transport, cycling routes)
- Providing incentives for choosing greener travel choices (e.g., discounted bus season ticket, free bike loan)
- Delivering the infrastructure for the future of mobility (e.g., EV charging, cycle hub)





GREEN TRAVEL

Promoting more sustainable modes of travel

In 2022, we made progress in enabling the future of mobility.

- Installing & operating additional Electric Vehicle (EV) charging points for a total of 28 so far.
- Providing incentives for cycling to/from and within the Campus
 - 2 x Cycle to Work Days with free bike maintenance, each attended by over 100 Campus cyclists
 - Free bike loan scheme available to all employees on Campus who can register on the Donkey Republic app with their company email address, use their phone to unlock a bike and enjoy 48 hours of free riding time.
 - 9 x bikes + 5 x e-bikes on Campus
 - 2 x e-bikes at Didcot Parkway railway station
 - In 2022, these bikes were hired close to 1,000 times!
- Funding a branded bus stop at Didcot parkway to improve user experience and wayfinding
- Lobbying for a new bus route connecting the Campus to Newbury to be launched in 2023

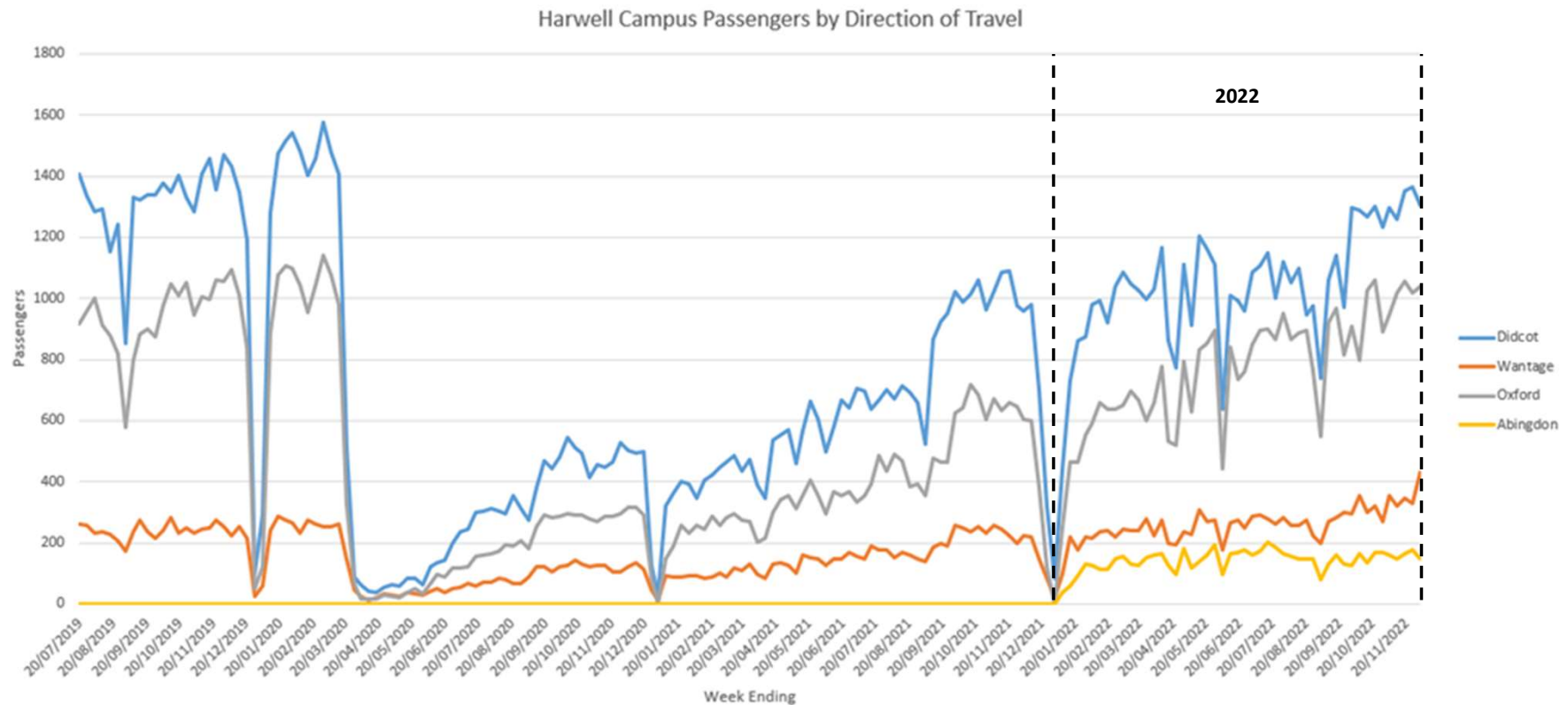




GREEN TRAVEL

Promoting more sustainable modes of travel

In 2022, we saw a steady return of bus users following Covid-19, with a new service to/from Abingdon being introduced.

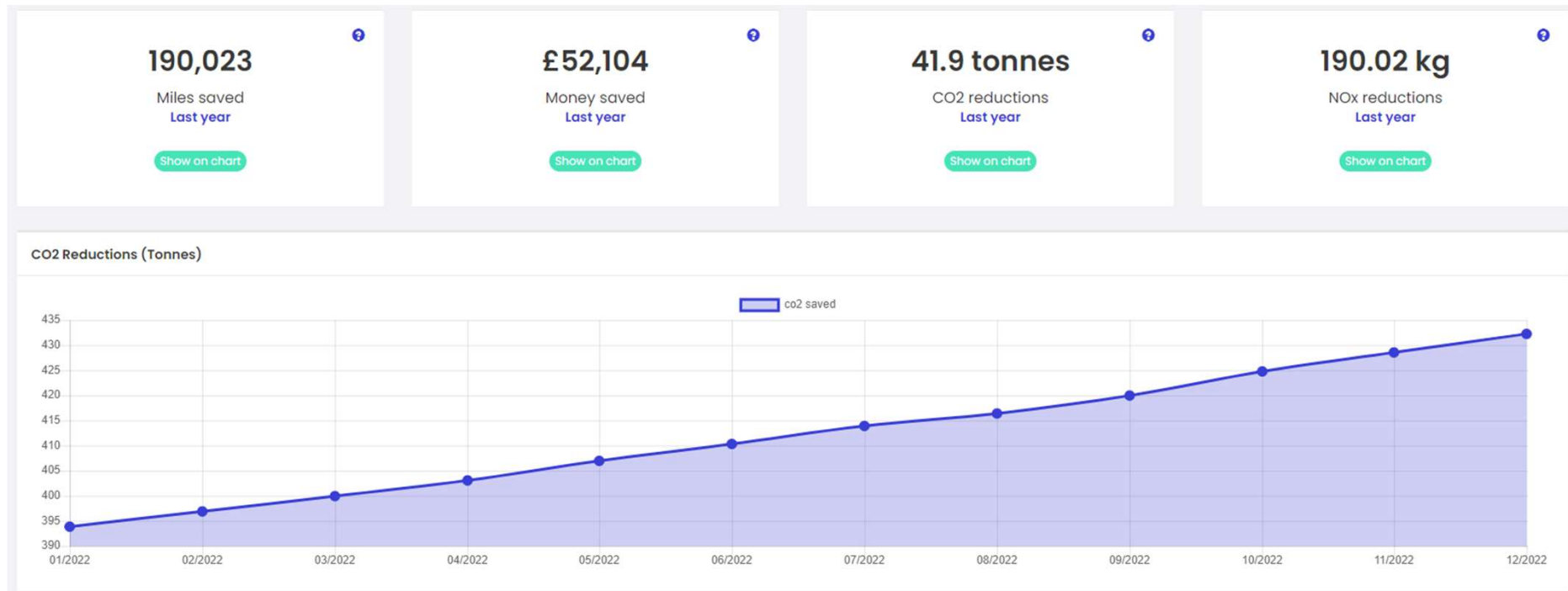




GREEN TRAVEL

Promoting more sustainable modes of travel

In 2022, our Liftshare community grew by 121 members to nearly 900, saving an estimated 41.9 tonnes in carbon emissions for a total of 434 tonnes since membership began.





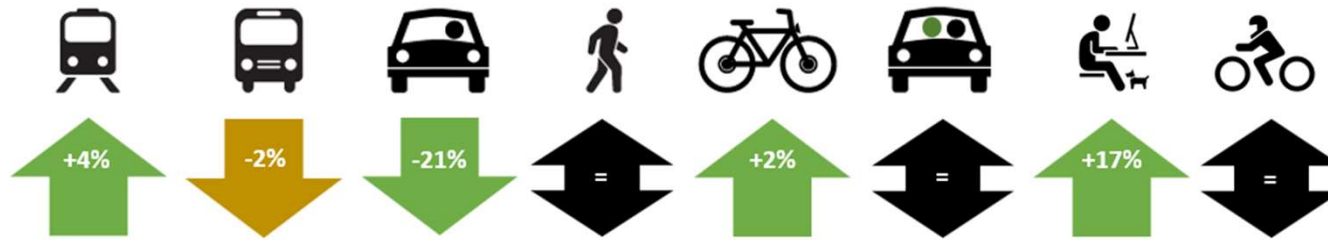
GREEN TRAVEL

2022 Travel Survey

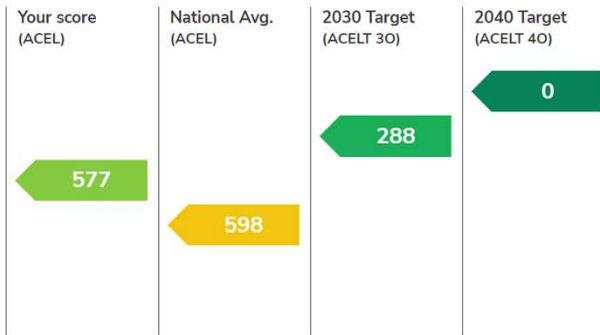
In 2022, we carried out another travel survey, receiving over **1,000** responses and gathering valuable insights into our Campus users' commuting habits.

The data collected allows us to estimate the Campus Average Commuter Emissions Level (ACEL) and inform our transport infrastructure decisions.

Harwell Campus Travel Survey 2022



Modal shift compared to 2018 (pre-pandemic)



	2011 % by travel mode UK (ONS)	% of your employees	Number of workers	CO ₂ e Emissions (kg/year)
Work at home	10.26%	17.67%	1,237	0.00
Walk / Run	9.80%	1.49%	105	0.00
Cycle	2.87%	9.49%	665	0.00
Bus or coach	7.33%	9.96%	698	221,467
Tube / Metro / Tram	3.95%	0.00%	0	0.00
Train	5.16%	4.66%	327	138,404
Motorcycle	0.80%	1.16%	82	27,017
Liftsharing	9.81%	6.85%	480	239,797
Drive alone	49.05%	48.72%	3,411	3,411,063



GREEN TRAVEL

Personal Travel Plans

In 2022, ARC employees were equipped with a personal travel plan powered by Mobilityways.

Following this successful trial, it became part of ARC Membership offering, being made available to other organisations on Campus as a service.

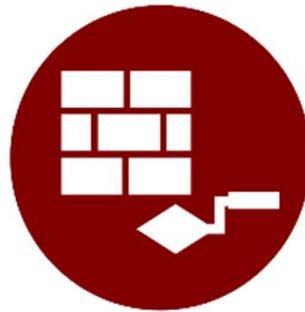
mobilityways

Hi
Here's your personal travel plan results from your home to **Harwell Campus** on **10/01/2023**, arriving by **08:30** and leaving at **17:30**.

2 Recommended modes Outbound

- Liftshare** 4.5 - 22.3 miles
16 matches available
[VIEW DETAILS](#)
- 07:16 - 07:53** **37 min**
1.15 Kg CO2 7.9 miles

mobilityways



MATERIALS & SUPPLY CHAIN

Shift the development & operation of our portfolio towards a circular economy through sustainable procurement & responsible sourcing.

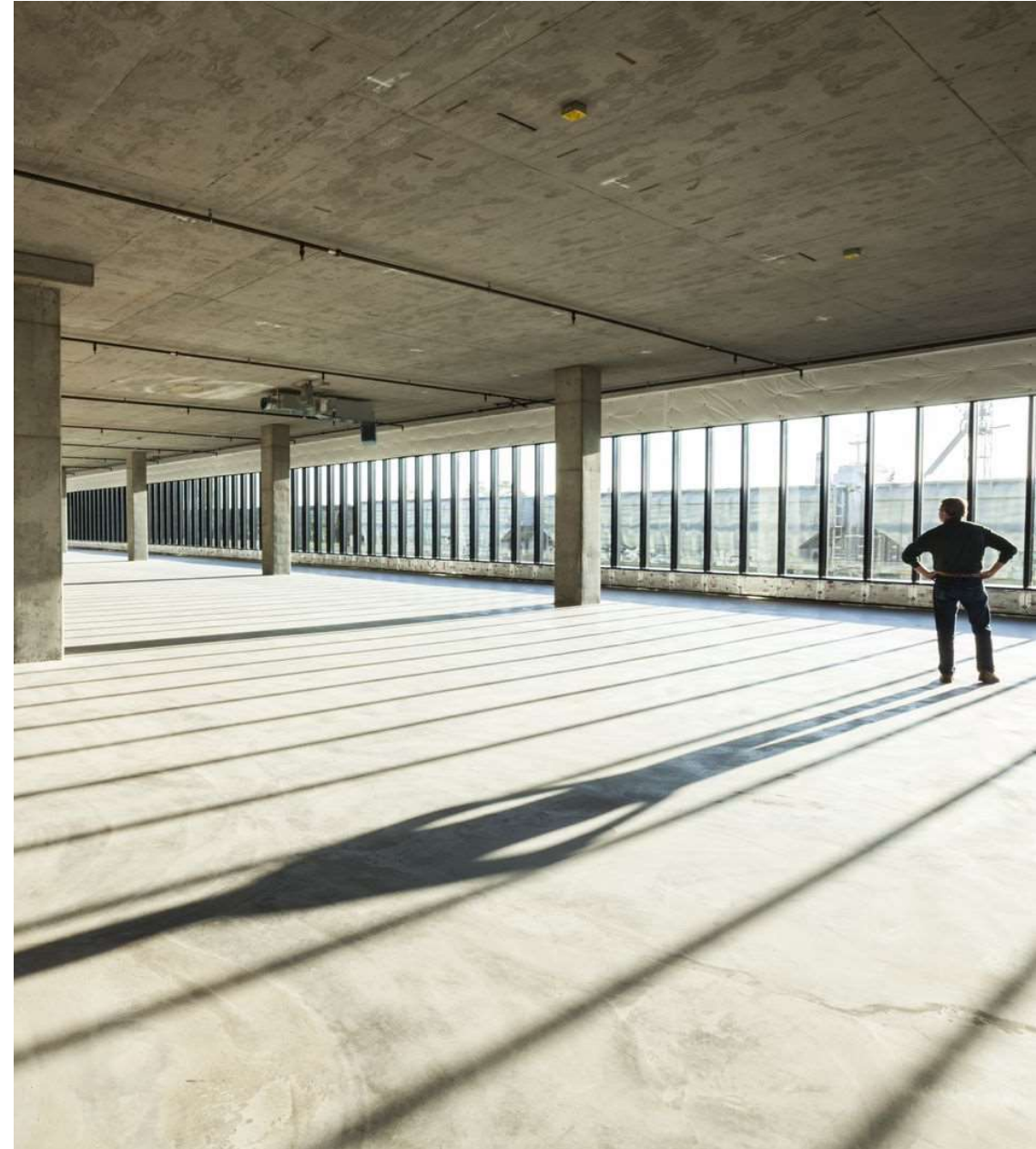


MATERIALS & SUPPLY CHAIN

OBJECTIVE 3 - Shift the development & operation of our portfolio towards a circular economy through sustainable procurement & responsible sourcing.

This will be achieved by:

- Applying Sustainable Procurement principles when selecting our Supply Chain
- Avoiding waste & maximising Reuse & Recycling
- Securing Zero Waste to Landfill from managed buildings
- Procuring responsibly sourced construction products & materials (e.g., FSC/PEFC timber)
- Specifying construction materials with high recycled content (e.g., aggregates, concrete, steel, plasterboard, etc.)
- Designing buildings for disassembly to allow materials to be re-deployed at their end-of-life



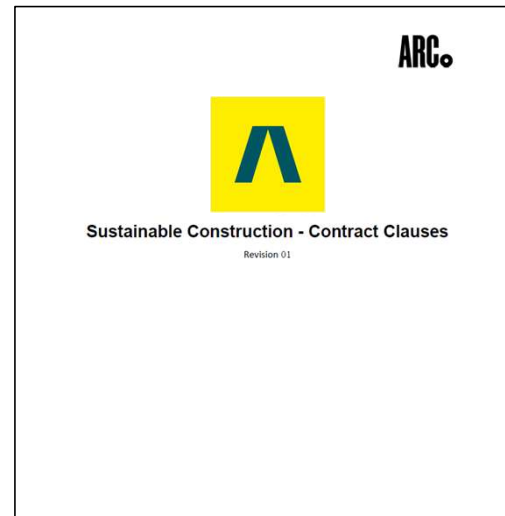
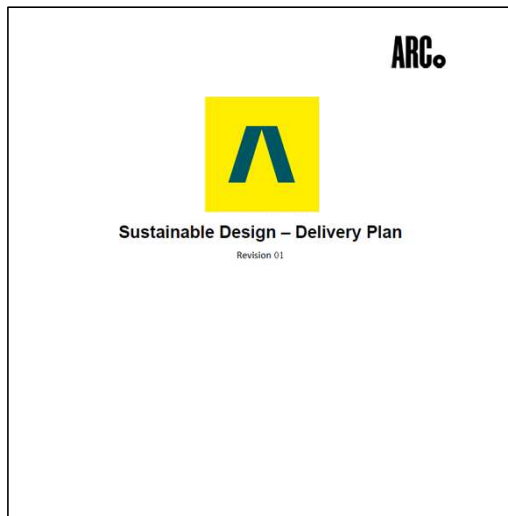


SUSTAINABLE DESIGN & CONSTRUCTION

Delivering sustainable buildings through our supply chain

In 2022, we advanced our standards to deliver sustainable buildings for science & innovation through our supply chain:

- Sustainable Design – Delivery Plan
- Sustainable Tendering – PQQ & ITT
- Sustainable Construction – Contract Clauses
- Sustainable Procurement Plan – Construction Materials





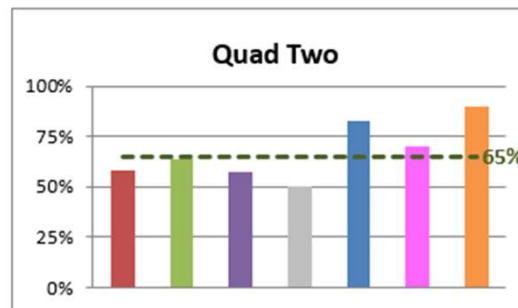
SUSTAINABLE DESIGN & CONSTRUCTION

ARC Green Building Assessment Method

In 2022, we initiated the development and implementation of our Green Building Assessment Method ('SciBER'), providing an evidence-based framework for sustainability performance management & reporting.

- Based on Harwell Campus Design & Construction Sustainability Brief for New Development & Major Refurbishment developed in 2021
- Built around 7 key focus areas and associated set of criteria aligned with best practice industry standards
- Quad Two was retrospectively assessed using this method:
 - Achieving a 65% Rating ('Very Good'), 5% short of 'Excellent' (70%)
 - Performing particularly well on Community & Local Economy (90%), Travel & Connectivity (83%) and Health & Wellbeing (73%), with opportunities for improvements highlighted across all areas.

Carbon & GHG Emissions	58%
Nature & Environment	64%
Materials & Supply Chain	58%
Climate Resilience & Adaptation	50%
Travel & Connectivity	83%
Health & Wellbeing	70%
Community & Local Economy	90%
Harwell Sustainability Rating	65%



Quad Two

Harwell, part of **ARC**, a campus fit for the future & a catalyst for sustainable growth.

- 1 **Biophilic interior design** within the reception area, offering a sense of wellbeing on entrance
- 2 **Ground Source Heat Pump** serving radiators in the common areas using geothermal energy
- 3 **Variable Refrigerant Flow (VRF)** providing energy efficient cooling & heating to occupied spaces
- 4 **Elevator with regenerative drive** producing in-use electricity that can be transferred to the building
- 5 **Highly efficient LED luminaires** with intelligent lighting controls to reduce energy consumption
- 6 **EPC 'A' Rating achieved** by optimising the building fabric performance for energy efficiency
- 7 **Energy efficient air handling units** recovering exhaust heat in winter, and cool in summer
- 8 **Improved indoor air quality** through CO₂ sensors connected to mechanical ventilation
- 9 **Wildlife-friendly external lighting** designed to reduce night-time light pollution
- 10 **Underground rainwater soakaway and permeable tarmac** preventing off-site discharge and associated flood risk
- 11 **All electric building** allowing the building to benefit from the UK grid decarbonisation
- 12 **50 spaces bicycle shelter** with green 'sedum' roof
- 13 **4 electric vehicle charging points** enabling the transition towards low & zero carbon transport
- 14 **Enhanced landscape design** providing connections with nature and enabling a gain in biodiversity
- 15 **Light-coloured asphalt** used on the car park around the building to reduce the urban heat island effect

Hawkins\ Brown

 HOARE LEA

 BIDWELLS



EXTERIOR ARCHITECTURE





SUSTAINABLE DESIGN & CONSTRUCTION

Materials Re-Use

In 2022, we continued maximising the use and reuse of materials where possible.

- Quad Two Contractor (SDC) partnered with a local social enterprise and charity, Oxford Wood Recycling, to maximise recycling and reuse of waste construction timber through the Wood Shop in Abingdon.
 - In 2023, we are aiming to work with Oxford Wood Recycling to provide a board walk made of reclaimed timber within the Spacescapes art display.
- SDC also advertised excess construction materials (non-waste) to be used by the local community.
- Virgin timber from tree works (non-waste) was stored and used to create:
 - Eco-sculpture (see 'Art' section)
 - Hibernacula (see Project 'WHIP')
 - Benches





SUSTAINABLE WASTE MANAGEMENT

Zero Landfill

In 2022, we maintained 100% operational waste diversion from landfill for our managed buildings.

- **69** tonnes of waste were collected, representing **3.1kg/sqm***.
- **43.2%** were recyclables segregated at source.

Waste Produced													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
Waste destined for EFW	2,379	3,163	3,065	3,065	3,019	3,022	3,412	3,178	4,200	4,099	3,323	3,331	39,256
Glass	120	40	-	40	174	40	36	90	8	4	-	28	580
Mixed Recyclables	1,567	1,610	1,909	1,450	1,854	1,591	1,992	2,192	1,978	2,376	2,305	2,528	23,352
Food	366	494	412	589	597	965	626	368	683	282	276	245	5,903
Wood And Wooden Items	-	-	-	-	-	-	-	-	-	-	-	-	-
Green Waste	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	4,432	5,307	5,386	5,144	5,644	5,618	6,066	5,828	6,869	6,761	5,904	6,132	69,091

Waste Summary													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
Recyclables	2,053	2,144	2,321	2,079	2,625	2,596	2,654	2,650	2,669	2,662	2,581	2,801	29,835
Non-Recyclables	2,379	3,163	3,065	3,065	3,019	3,022	3,412	3,178	4,200	4,099	3,323	3,331	39,256
Percentage Recyclables	46.3%	40.4%	43.1%	40.4%	46.5%	46.2%	43.8%	45.5%	38.9%	39.4%	43.7%	45.7%	43.2%
Trees Saved	16	17	20	16	19	17	21	24	20	24	24	26	243
CO ₂ e Scope 3 GHG (kg)	91	109	111	105	116	113	125	122	142	142	123	128	1,427
CO ₂ e Saved (kg)	1,283	1,692	1,595	1,708	1,685	1,917	1,877	1,612	2,264	1,969	1,621	1,603	20,806
Power Generated (MWh)	1.3	1.7	1.7	1.7	1.6	1.6	1.9	1.7	2.3	2.2	1.8	1.8	21.3



*B148, B151, B166, B168, B363, B587, HQ, Genesis, Quad One, Zephyr = 22,216sqm

All figures in kg unless otherwise stated. See stated.



CLIMATE RESILIENCE & ADAPTATION

Make our buildings & infrastructure resilient to the predicted changes in the climate.



CLIMATE RESILIENCE & ADAPTATION

OBJECTIVE 4 - Make our buildings & infrastructure resilient to predicted changes in the climate.

This will be achieved by:

- Designing buildings & infrastructure to cope with the predicted impacts of climate change (using UK Climate Projections), including heavy rainfalls, storms, and heat waves
- Managing rainwater through sustainable drainage systems (SuDS) to protect downstream communities from increased flood risk
- Integrating climate resilient species into landscaping (e.g., drought-tolerant)



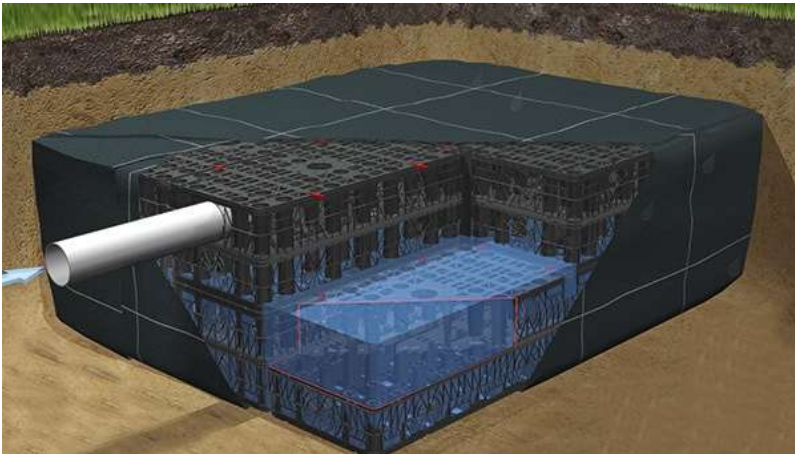


CLIMATE RESILIENCE & ADAPTATION

A Campus Fit for the Future

In 2022, we applied the predicted changes in climate when designing our new developments.

- We undertook Floor Risk Assessments (FRA) and integrated underground soakaway tanks as well as permeable surfaces within the hard landscape to prevent and/or minimise off-site rainwater discharge.
- We assessed the impact of Peak Solar Gain on thermal comfort and cooling demand to optimise the façade response strategies (orientation, shading, glazing ratio).
- We considered the Urban Heat Island effect by using light-coloured asphalt within car parking areas.
- We selected climate-resilient species within our landscape designs.





HEALTH & WELLBEING

Provide an environment that safeguards and enhances the safety, health & wellbeing of staff and visitors.



HEALTH & WELLBEING

OBJECTIVE 6 - Provide an environment that safeguards and enhances the health & wellbeing of staff and visitors.

This will be achieved by:

- Designing our buildings to optimize daylighting, views of the outside, thermal comfort, and indoor air quality
- Applying biophilic design principles to connect buildings with nature and natural materials
- Facilitating healthy living and promoting active travel choices
- Providing easy access to green spaces and to places of rest and reflection across Campus
- Developing a Campus community with a sense of belonging





WELLBEING

Mens sana in corpore sano

In 2022, we focused on offering the best environment for Campus' users to thrive, both physically and mentally.

- Making advances in biophilic design, connecting buildings and their occupants with nature and natural material, by:
 - Providing views out of the buildings onto the Campus landscape and maximising daylighting.
 - Using timber as structural and cladding material for The Hides and clay plaster within Quad Two.
- Offering free lunchtime outdoor yoga classes suitable for everyone and all levels.
 - Yoga is a safe and effective way to increase strength, flexibility and breathing to boost physical and mental wellbeing.





HEALTHY BUILDING

Indoor Air Quality

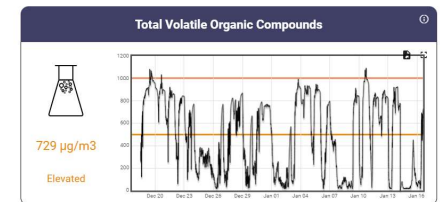
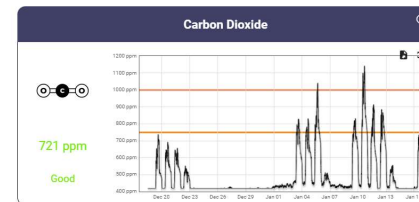
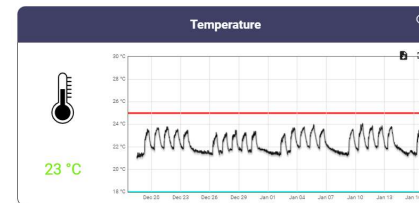
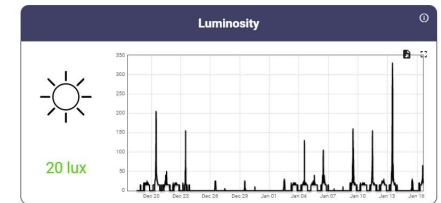
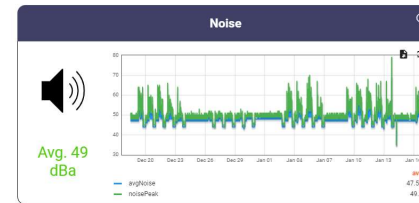
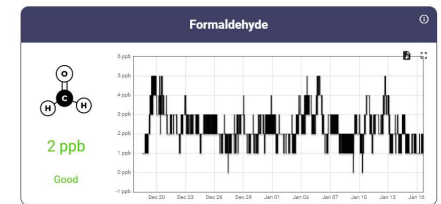
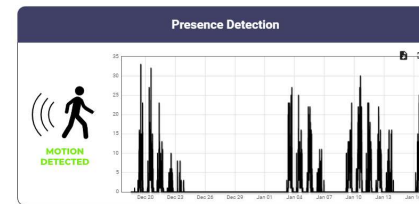
In 2022, we installed a network of 16 real-time indoor air quality monitoring sensors within Quad Two to maintain an optimal working environment.

The system measures:

- Total volatile organic compounds (TVOCs)
- Relative humidity
- Carbon dioxide
- Formaldehyde
- Temperature
- Particulates
- Luminosity
- Motion
- Noise

H²RWELL Quad 2

Label	Air Quality Rating	Air Quality Risk
Diamond	Poor	CO2
F55	Poor	Humidity
Franklin	Poor	Humidity
Launchpad 1	Poor	Humidity
Launchpad 2	Good	
Miri	Poor	CO2
Moon	Poor	Humidity
Nano	Elevated	TVOC





PUBLIC ART

Feeding the Soul

In 2022, we delivered two art projects and initiated a new one.

- EcoSculpture – Creating habitats for insects in a creative art form
- Spacescapes – 8 monoliths with amazing photography and informative details about our solar system
- Heritage Trail – First art piece is complete at point 1 and 3 plaques commissioned for a further 3 interest points





**COMMUNITY &
LOCAL ECONOMY**

Make a lasting positive contribution to the community & local economy by delivering environmental, economic, and social value.



COMMUNITY & LOCAL ECONOMY

OBJECTIVE 7 - Make a lasting positive contribution to communities & the local economy.

This will be achieved by:

- Delivering a Community Employment Plan (CEP) for each new development
- Encouraging our supply chain to employ a local & diverse workforce, and to use local businesses, SMEs & VCSEs, where possible
- Providing financial and/or non-financial support to local charities and community groups
- Inspiring young people through STEM, and creating opportunities for apprentices and work experiences
- Make our assets available to local community groups where possible





WORK OPPORTUNITIES FOR YOUNG PEOPLE

ARC Employment at H[^]arwell

In 2022, ARC created opportunities for young people to join the H[^]arwell team:

- **Work experience** – The Development & Construction Team welcomed a Year 10 student from King Alfred School (Wantage) for a week's work experience.
- **Graduate** – After a very successful few months' work experience in 2021, Will was offered a graduate surveyor role.
- **Apprentice** – Joe started his 5-year Building Surveyor Apprenticeship within the Development and Construction Team.
- **Ukraine Sponsorship Scheme** – Harwell was delighted to help a Ukrainian linguistic student who come over to the UK, by herself, under the Ukraine Sponsorship Scheme by offering her temporary part-time work.





COMMUNITY EMPLOYMENT PLAN

Creating opportunities for the local community

In 2022, H^Arwell demonstrated its leadership in Community Employing Plan (CEP).

- Quad Two CEP achieving great results:
 - Workshop Day organised for the pupils of a local school to provide experience of the skills required to manage a construction site.
 - 163 days worked by apprentices from 4 different contractors on the project: SDC, Total Electrical, FP Hurley and PG Morris.
 - University student offered a 6-month placement.
 - SDC achieved an 'Excellent' rating under the Considerate Contractors Scheme (CCS).
- Nurture Landscapes offering a 2-weeks work experience to vulnerable youngsters supported by SOFEA whose mission is to enable the transformation of people's lives, and their communities, with a major focus on young people.
- H^Arwell hosting a Community Employment Plan Workshop organised by OxLEP and sharing its experience in successfully implementing a Community Engagement Strategy through CEPs.
- H^Arwell sponsoring the Oxfordshire Apprenticeship Awards.



OxLEP Skills Hub
905 followers
3h • 🌐

'Community Employment Plan workshop: OxLEP Skills joins forces with partners to champion construction and development skills and training initiatives.'

We held our first Community Employment Plan (CEP) workshop in September, led by Catherine Armstrong, our fantastic Community Employment Plan Advisor, to seek input from economic development teams, developers, consultants and local planning teams and showcase benefits from developments where CEPs are currently being delivered.

Thank you to the presenters Dawn Crawford, Jen Healy and Karen Tolley and to all who attended for your invaluable input into development of our CEP programme, including refreshing our Evidence Paper.

#employment #construction #skills #cep #training
Richard Byard Jen Gant Dinny Shaw Sarah Marlow





INSPIRING THE NEXT GENERATION

Careers in Construction

In 2022, we were excited to work with The WOW Show and Edge Picture Company who partnered with OxLEP and local businesses to support education in Oxfordshire.

- Harwell sponsored a 'Careers in Construction' film, promoting the different opportunities within the Design & Build industry, including environmental professions (Ecologist & Sustainability Manager).
 - This was supported by our consultants from Bidwell's, Baynham Meikle, Hawkins\Brown and RPS who were all filmed on Campus.
 - This film is aimed at secondary school students, and their teachers, to inspire and raise awareness for careers in Construction and will be aired on The WOW Show to reach a greater audience: www.thewowshow.org/youtube



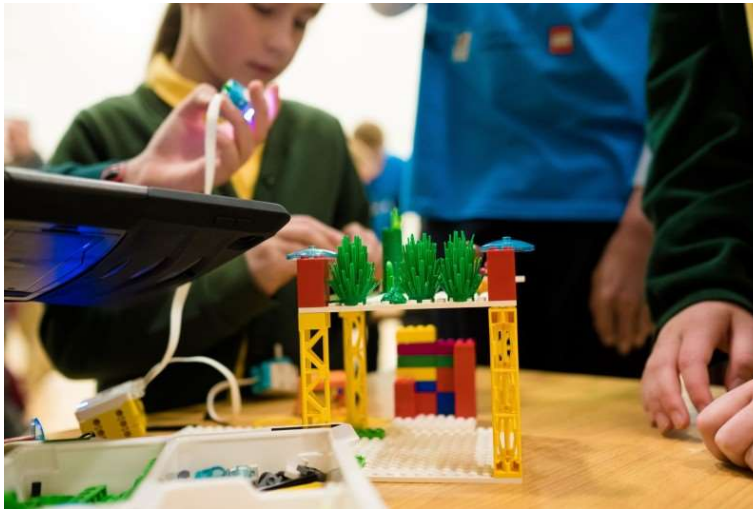


INSPIRING THE NEXT GENERATION

RE:CODE program

In 2022, ARC invested in the next generation of innovators by supporting a STEM program facilitated by the Institute of Imagination, Raising Robots and LEGO.

- Sponsoring a series of workshops with local primary schools to teach children how to build and code houses and cars for a sustainable future.





SUPPORTING CHARITIES

Giving back to the local community

In 2022, H^Arwell and its members made donations to local charities dedicated to support people in their community.

Garden Bog project

Element Six (E6), part of the De Beers Group, was successful in its application to the 'Ambassadors for Good' programme, securing £5,000 funding for our 'Garden Bog' initiative. The project will see the installation of a new, accessible, compostable toilet at Wantage Market Garden, along with new garden equipment, seating and refreshment facilities. This will provide improved facilities at the garden for both adults with learning disabilities and autism and the volunteer gardeners who work together at the garden.



Dear Santa Charity

Delivering Christmas Gifts to children under the age of 16 who are in care, in hospice or suffering from a terminal illness at home. £1063.25 raised by DiSH.

Markers for Mindfulness

Local community project, run by a local Didcot student, helping to provide supplies to schools and individual students in need. Unwanted pens and stationary collected by ARC as part of its office move from HQ to Quad Two.

The Chiltern Children's Centre

Providing support for young people with disabilities to live life to the full. £200 donated by ARC.



ADVOCACY & ENGAGEMENT

Develop a Sustainable Campus through strong partnerships and collaboration.




HARWELL GREEN WEEK 2022

Raising awareness & celebrating Climate Action

In 2022, we organised the 1st Harwell Campus Green Week.

- Over **30** speakers contributed to the event.
- Over **100** Campus employees cycled to DiSH on Wednesday morning.
- **221** tickets ordered by **93** attendees from a wide range of organisations.
- **88%** of attendees on the Wednesday virtual session didn't travel to the Campus by car (41% were working from home, 41% cycled and 6% took the bus).
- **86%** of attendees on the Thursday morning virtual session volunteer within their local community at least once a year.

Energy & Sustainability Week



Watch the virtual talks that took place during Energy & Sustainability Week 2022

[View more here →](#)

<https://www.harwellcampus.com/energy-and-sustainability-week-2022/>

Harwell Campus Energy & Sustainability Week (13 – 16 June 2022)

in collaboration with **HARWELL ENERGY**

Harwell Campus is joining the 2022 World Environment Day campaign #OnlyOneEarth by organising its 1st Energy & Sustainability Week (aka Green Week) from the 13th to the 16th of June 2022.

Each day will be dedicated to a Sustainability Theme, including Virtual Talks (Online) & Outdoor Events:

Monday 13 June – Energy & Carbon

10:00 – 12:00 Virtual Talks (online)
13:00 – 15:00 Campus Walk & Talk, starting from RAL Reception (limited capacity)

Tuesday 14 June – Nature & Biodiversity

10:00 – 12:00 Virtual Talks (online)
13:00 – 14:00 & 14:00 – 15:00 Campus Walk & Talk, starting from the Hides (limited capacity)

Wednesday 15 June – Green Travel & Transport

07:30 – 09:00 Cycle to Work with free breakfast (at DiSH), supported by HarBUG
08:00 – 12:00 Bike Doctor 'surgery' for free maintenance (at DiSH)
11:00 – 13:00 Meet Oxford Bus Company (at DiSH)
10:00 – 12:00 Virtual Talks (online)

Thursday 16 June – Community & Wellbeing

10:00 – 12:00 Virtual Talks (online)
12:30 – 13:15 Free Yoga in Nature or Walk the Campus Trail (2km), meeting at the HQ Building

To attend any of these sessions, book your free tickets today



For more details, visit www.harwellcampus.com/discover/events/ or contact the organisers:

Emmanuel Deschamps, Harwell Campus Sustainability Manager | emmanuel.deschamps@harwellcampus.com
Emma Southwell-Sander, Harwell Energy Tech Cluster Development Manager | emma.southwell-sander@stfc.ac.uk

#OnlyOneEarth





OX TO ZERO

Supporting collaboration & knowledge sharing towards Net Zero

In 2022, we co-founded OX to ZERO, a Summit bringing together leading climate innovators.



[Home](#) [Programme](#) [Speakers](#) [Partners](#) [News](#) [Contact](#)

OX to ZERO Solutions Summit

Oxfordshire's world-leading solutions to reaching net zero

<https://oxtozero.com/>



BEING PART OF THE SOLUTION

Thought Leadership

In 2022, we actively contributed to the sustainability conversation, in Oxfordshire and beyond.

- 'Net Zero' by Oxfordshire Local Enterprise Partnership (OxLEP)
- 'Decarbonisation of Heat' by Oxfordshire Greentech & Cambridge Cleantech
- 'Digital Energy Innovation' by Amazon Web Services
- 'Biodiversity Net Gain thought leadership' by Willmott Dixon
- 'Building Nature In: An urgent call to action' by the Earth Trust

Building Nature In: An Urgent Call to Action
Meet the speakers

Matthew Battle
UK Property Forums

Mark Beard
Beard Construction

Andrée Davis & Adam White
Davis White

Ben Gardner
Ecology by Design

Jane Houghton
Natural England

Dr Geeta Ludhra
Brunel University

Peter Massini
Future Nature Consulting

Jayne Manley
Earth Trust

Earth Lab Launch event
Wednesday 18th May
Showcase tours and panel debate from 14.00

earth trust

WILLMOTT DIXON
SINCE 1873

INVITATION

**BIODIVERSITY NET GAIN
THOUGHT LEADERSHIP LUNCH**

VENUE:
Earth Trust (Fison Barn)
Little Wittenham, Abingdon, OX14 4QZ

DATE: Tuesday 3rd May
TIME: 12:00 - 15:00 followed by an optional
tour of the facilities including the award
winning Earth Lab until 16:00

Please RSVP to centralsouth.communications@willmottdixon.co.uk by 22nd April

Biodiversity Net Gain (BNG) is an approach to development and/or land management that aims to leave the natural environment in a measurably better state than it was beforehand.

Willmott Dixon is hosting this event because BNG legislation will apply to all our customer's developments likely starting in 2023 and is one of our Now or Never Commitments.

The objectives of this event are to:

- Understand where our customers are in relation to BNG planning
- Share our experience so far in measuring, planning, and delivery
- Discuss BNG as part of local area planning
- Explore local offsetting as a tool to achieve targets and maximise impact

