



ESG Report 2022

# NEW HORIZONS



Contents

About this report	4	Our facilities	22	Sites under construction	40	Using waste to drive the Net Zero Economy	52	<b>ENVIRONMENTAL</b>	<b>54</b>	Data and reporting	86
Chairman's Foreword	6	Driving progress at Ferrybridge 1	24	A new future for Skelton Grange	42	Carbon capture, utilisation and storage (CCUS)	53	Biodiversity assessments at plants	55	TCFD Index	88
CEO's Foreword	7	Reducing dust	24	Putting the environment first	42	Electrolytic hydrogen	53	Effective air quality management	56	Glossary	90
ESG achievements in 2022	8	Saving water	25	Working with the local community	42	Heat supply and private wire	53	Climate change	58		
ESG strategy and performance measures	10	Building an inclusive culture	25	Case study: Sustainable construction using recycled concrete	43			Measuring emissions	60		
Role of Energy from Waste (EfW)	12	Case study: Helping to put food on the table	26	Case study: Support for Leeds Rowing Club	44			Managing resources sustainably	62		
Policies on the horizon	14	Cutting ammonia	28	Building relationships with the local supply chain	45						
Our progress in 2022	16	Leading the charge	29	Investing in the community at Kelvin	46			<b>SOCIAL</b>	<b>64</b>		
In touch with nature	17	Case study: enfinium Ferrybridge and O.C.O Technology APCr processing partnership	30	Building relationships with the local supply chain	46			Employee engagement	65		
Our Horizon strategy	18	Education and engagement at Kemsley	32	Kelvin litter picking engagement day	48			Community	66		
		Combined heat and power	32					Health and safety	68		
		Working with our waste suppliers	32					RoSPA safety award	70		
		Case study: No BEARS	33					International women's day	72		
		Suppliers' Open Day	33					Case study: Developing the next generation of energy from waste engineers	74		
		Opening doors at Parc Adfer	34					Behavioural safety surveys	76		
		Family Day	34								
		Partnering with the community	35					<b>GOVERNANCE</b>	<b>78</b>		
		Visitor Centre opening	35					Business ethics	79		
		Case study: North Wales Wildlife Trust partnership	36					Industry associations	80		
		Landscaping at Parc Adfer	37					Corporate governance	81		
								enfinium Group Limited Board	83		
								Case study: Learning management system	84		



# About this report

This Environmental, Social and Governance (ESG) report is our way of sharing and celebrating our journey and progress as we strive to become a truly sustainable business.

2022 was the second full year of operations for our current fleet of Energy from Waste (EfW) facilities. Which means we can now compare the numbers against our first report published in 2021. We will continue to review our ESG performance on an annual basis, adding in further insights, to ensure we stay on track to reach our goals.

This year we have restructured how we approach our ESG commitments, dividing them into three 'Horizons'.

**Horizon 1** focuses on how we are driving sustainability at our operational facilities around the country.

**Horizon 2** focuses on our emerging business with the sites currently under construction, as well as our investment and development into new technology, products and services.

And **Horizon 3** is focused on building the future of waste treatment for the Net Zero economy where we are investing in plans to decarbonise our business and use new technology to develop innovative energy solutions.

For more information about enfinium and our ESG commitments, please visit [enfinium.co.uk/esg/](https://enfinium.co.uk/esg/)



"In our second year, our commitment to environmental, social and governance considerations have only strengthened, and we are proud to publish our progress and achievements by our people in 2022.

In particular, we have developed decarbonisation plans for the future, enhanced our Scope 3 reporting for our two construction projects, Skelton Grange and Kelvin; put in place a new community funding framework and further improved health, safety and wellbeing. Thank you to the people and teams across the business for setting us up on our journey towards new horizons."

**Philip Curds,**  
Head of ESG & Sustainability



## Chairman's Foreword



"In these challenging times, more than ever we need to focus on harnessing the combined resources and capability of government, public bodies, private business and capital, to make a long-lasting and positive impact on our physical environment and the people and communities who live in it."

Sir Peter Gershon  
Chairman

Over the past year, the economic and political landscape in the UK and globally has been dominated by spiralling inflation, cost of living pressures, and concerns over both the cost and security of energy supplies. All were driven largely by the invasion and ongoing war in Ukraine. It may seem at times like these, that the environmental, social and governance agendas of both governments and businesses should be set aside while more pressing issues are managed. This would, in my view, be a mistake.

In these challenging times, more than ever we need to focus on harnessing the combined resources and capability of government, public bodies, private business and capital, to make a long-lasting and positive impact on our physical environment and the people and communities who live in it.

At enfinium, providing secure, reliable, homegrown energy to homes and businesses has been especially important at times of constrained supply, in addition to the traditional EfW role of diverting residual waste from landfill and export. However, much of the last year has been spent focusing on the future and, in particular, the first phase of developing the business's decarbonisation master plan.

This work, endorsed by the Board in October 2022, has led to the publication of this report. enfinium plan to publish an ambitious Net Zero Transition Plan later this year. The Plan provides us with a detailed roadmap for reaching Net Zero emissions as a business and delivering the carbon removals that are so critical to the UK's climate goals.

As well as looking to the future, enfinium also focuses on its impact today. 2022 saw the development of a new community funding framework allowing each operational facility and construction project to invest in local community projects and charitable initiatives. The theme over the past year has been on helping to alleviate the cost of living crisis for those most in need and a number of funding awards have already been made. Alongside this, a new volunteering policy will allow all of enfinium's people to spend time each year supporting good causes in their community.

For enfinium's own people, the company has continued to drive forward with programmes to ensure 'Safety on Purpose' and enhance the health, wellbeing and diversity of all of our teams. The launch of the first enfinium apprenticeship programme in September, saw four new recruits join the business and start their journey to develop the advanced technical and engineering skills that our economy will need in the future.

These achievements from 2022 are showcased in this report and are testament to the commitment of all of enfinium's people to continue to make a positive impact, whatever the challenges may be.

## CEO's Foreword

Twelve months ago we committed to bringing ESG into everything we do at enfinium, to help ensure a better long-term future for our customers, our employees, our investors and for the planet. With four operational EfW facilities across the UK, a further two under construction and over 250 employees, this is no small undertaking.

However, as you will read in this our second ESG Report I feel remarkable progress has already been made thanks to the enthusiasm of our people and the support of our many stakeholders; enabling us as a business to embrace this positive change.

As an EfW operator delivering homegrown energy to local communities, the most significant difference we can make is through our actions and our investment decisions. Over the past year we have focused enormous effort on putting a plan in place to deliver our commitment of achieving Net Zero carbon emissions across our fleet, in line with the goals of the Paris Agreement on Climate Change.

To that end, 2022 has been another year of progress in ESG at enfinium as we built on the strong foundations laid out in last year's inaugural report, to deliver on our new horizon strategy. Our three horizons frame how we view our business activities, and the report has been structured around these horizons to enhance our environmental, social and governance objectives. It guides how our people deliver our ESG objectives together.

We have for the first time enhanced our Scope 3\* reporting for our two construction projects, enfinium Skelton Grange and Kelvin. Working with our EPC partners, Hitachi Zosen Inova and ACCIONA, we have been able to provide additional category data for purchased goods such as concrete, steel, lime and ammonia as well as fuel used on the projects. This takes our Scope 3 reporting a step forward from last year which was limited to business travel. We are committed to adding to Scope 3 reporting as we can, working with our supply chain to enhance transparency.

We have made good progress on working more collaboratively with our local communities, shown through our first waste supplier days at Ferrybridge and Kemsley and ongoing charitable work with the Knottingley Foodbank and Leeds Rowing Club. I am also particularly pleased with our safety performance last year for both employees and contractors, demonstrated by our life saving rules campaign and behavioural surveys. Don't just take my word for it, RoSPA designated us with the 'Highly Commendable' award for the waste management and recycling industry.

Over the coming year, further improving clarity, transparency and accessibility in the fast changing, complex and crucially important area of sustainability will remain a key focus for our business.

Thank you for taking the time to read this report, and I hope you enjoy finding out more about our progress.



"I feel remarkable progress has already been made thanks to the enthusiasm of our people and the support of our many stakeholders; enabling us as a business to embrace this positive change."

Mike Maudsley  
Chief Executive Officer

\* Scope 3 are emissions indirectly produced by activities linked to the organisation's value chain.



# ESG achievements in 2022



## February

- First HR Roadshow



## April

- Whistleblowing hotline activated
- Kelvin Meet the Buyer event



## July

- Senior Leadership Group Roadshow
- ESG workshops



## September

- Unacceptable waste video
- RWM Letsrecycle Live
- Skelton Meet the Buyer event

## November

- Customer Satisfaction Survey

## March

- Apprenticeship programme launched



## June

- Kelvin Community Liaison Group meeting

## August

- Family Day Parc Adfer



## October

- ESG Away Day, Knepp estate safari
- Employee engagement survey
- NO BEARS unacceptable waste days at Kemsley and Ferrybridge
- Board decarbonisation masterplan review

## December

- Y Craig volunteer day



# ESG strategy and performance measures

Our ESG strategy was developed in 2021 by our dedicated environmental, social and governance team. It was created using recognised sustainability frameworks, and industry-recognised standards to ensure best-practice.

The priorities and ambitions we set then align as far as possible with the United Nations Sustainable Development Goals and their urgent call for action to deliver on the 2030 Agenda for Sustainable Development.

ENVIRONMENTAL

**Environmental protection**

Ensure we protect and enhance biodiversity, ecological areas, and associated ecosystem services, such as food, air and water.

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

**Climate change**

Achieve lower greenhouse gas and CO<sub>2</sub> emissions to continue on the path to deliver Net Zero.

13 CLIMATE ACTION

**Air quality management**

Continuous improvement in monitoring and remediation of air pollution as well as other on-site pollution and emissions.

7 AFFORDABLE AND CLEAN ENERGY

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

13 CLIMATE ACTION

**Sustainable resources**

Manage and conserve land and water resources effectively, encourage recycling and use resources sustainably wherever possible.

11 SUSTAINABLE CITIES AND COMMUNITIES

14 LIFE BELOW WATER

15 LIFE ON LAND

SOCIAL

**Employee engagement and wellbeing**

Work to develop an actively engaged team, promoting employee wellbeing to create a positive working environment and culture, to attract and retain individuals.

3 GOOD HEALTH AND WELL-BEING

10 REDUCED INEQUALITIES

17 PARTNERSHIPS FOR THE GOALS

**Community**

Work within the communities in which we operate, and the wider community, through outreach, engagement, charitable work, and communication to maintain our social licence to operate.

8 DECENT WORK AND ECONOMIC GROWTH

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

**Health and safety**

Create a workplace that believes in zero harm to physical and mental health.

3 GOOD HEALTH AND WELL-BEING

11 SUSTAINABLE CITIES AND COMMUNITIES

**Diversity, equality and inclusion**

Promote diversity, equality and inclusion to attract and retain talented people and improve business results by enabling everyone to fulfil their potential.

5 GENDER EQUALITY

10 REDUCED INEQUALITIES

GOVERNANCE

**Business ethics**

Adopt and maintain the highest standards of business ethics as a trusted partner to our customers, communities, suppliers and regulators.

3 GOOD HEALTH AND WELL-BEING

8 DECENT WORK AND ECONOMIC GROWTH

10 REDUCED INEQUALITIES

**Corporate governance**

Ensure compliance with best practice in corporate governance, reporting, independence and authorities, and approvals.

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

17 PARTNERSHIPS FOR THE GOALS

**Risk management**

Effectively identify, assess and manage risks and opportunities, as an integral part of the management structure and culture.

8 DECENT WORK AND ECONOMIC GROWTH

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

**Tax transparency**

Pay our taxes fairly and on-time, and remain transparent in the way we structure and operate our business as a responsible, long-term operator.

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION





# Role of Energy from Waste (EfW)

Delivering a circular economy and achieving Net Zero requires a decarbonised solution for residual waste.

With our EfW facilities across the UK and our Decarbonisation Hub plans, we are well-positioned to provide a long-term route for the sustainable management of residual waste. At enfinium, we know there are also opportunities to optimise our existing EfW infrastructure.

## Transforming the waste sector to fuel a green economy

Today we have four operational facilities and two in construction. Our operational sites are capable of processing up to 2.3m tonnes of residual waste every year, and generating up to 265MW of baseload electricity for UK homes and businesses. By diverting waste from landfill and minimising waste exports, our fleet already provides a complementary solution for the circular economy.

Our vision is to go further, by creating local Decarbonisation Hubs powered by the nation's waste. Using our existing EfW infrastructure, we have the potential to deliver carbon removals or 'negative emissions' with carbon capture, utilisation and storage (CCUS), and to produce electrolytic hydrogen, provide heat networks, and private wire and intermittent power as the grid evolves.

## Decarbonisation Hub ambition

Preventing emissions getting into the atmosphere is key to the UK strategy of achieving Net Zero by 2050. At enfinium, we have ambitious plans to turn Ferrybridge into our first EfW Decarbonisation Hub in the UK.

With a site like Ferrybridge and its two plants, we have the potential to capture up to 1.3 million tonnes of carbon dioxide per year. This could make it the largest EfW carbon capture project in Europe.

Around half of the waste we receive is biogenic. If we can capture emissions from this waste, we can generate negative emissions that will play a crucial role in helping the UK achieve its Net Zero goal. What's more, by utilising the Ferrybridge rail terminal, we could transport waste in and carbon dioxide out, immediately taking up to 200 trucks per day off the local roads and reduce road traffic emissions.

Our objective is to build awareness, understanding and support for the critical role of EfW in the UK. We believe EfW can make an important contribution towards the UK's circular economy, energy and decarbonisation needs. At enfinium, we are focused to leverage our existing infrastructure to continue to minimise landfill and waste exports, to bolster homegrown energy security, and to contribute towards local and regional decarbonisation.

## DEFRA residual waste targets\*

- **Long term target**  
By 2042 to reduce residual waste kg per capita by 50% from 2019 levels (excluding major mineral waste)
- **Interim target 1**  
By 31 January 2028 to ensure the total yearly mass of residual waste does not exceed 437 kg per capita (excluding major mineral waste)
- **Interim target 2**  
By 31 January 2028 to ensure the total yearly mass of residual waste does not exceed 25.5 million tonnes (excluding major mineral waste)
- **Interim target 3**  
By 31 January 2028 to ensure the total yearly mass of municipal residual waste does not exceed 333 kg per capita
- **Interim targets 4-8**  
By 31 January 2028 to ensure the total yearly mass of:
  - Residual municipal food waste does not exceed 64 kg per capita - equivalent to a 50% reduction from 2019 levels
  - Residual municipal plastic waste does not exceed 42 kg per capita - equivalent to a 45% reduction from 2019 levels
  - Residual municipal paper and card waste does not exceed 74 kg per capita - equivalent to a 26% reduction from 2019 levels
  - Residual municipal metal waste does not exceed 10 kg per capita - equivalent to a 42% reduction from 2019 levels
  - Residual municipal glass waste does not exceed 7 kg per capita - equivalent to a 48% reduction from 2019 levels

## Accelerating waste and recycling reforms

The UK EfW sector already plays a crucial role in minimising landfill and waste exports. In fact diverting waste from landfill has had a significant impact, with emissions reduced by 46% between 2008-2018.

Despite this progress in 2022, 11m tonnes of waste was sent to landfill, of which 6m tonnes was biodegradable. To deliver a circular economy and achieve a Net Zero waste sector, it is important that the transition continues - both to reduce waste and increase recycling rates, and to deal with remaining residual waste in the most sustainable way possible.

DEFRA has now published its long-term targets for increasing recycling and reducing the amount of residual waste by 50% by 2042 (see box opposite). At enfinium, we fully support these ambitious targets.

Our role is to ensure that the residual waste that remains by 2042 - 12-16 million tonnes - is dealt with in decarbonised infrastructure that maximises the energy recovered and is compatible with a Net Zero economy.

## Making progress

The Resources and Waste Strategy for England was introduced in December 2018 and is the first major policy in more than a decade. It outlines the introduction of a national Deposit Return Scheme (DRS), changes to Extended Producer Responsibility (EPR) requirements for packaging and measures to increase food waste collections. These measures, alongside others, underpin the achievement of the UK Government's ambitious targets to reduce waste and increase recycling rates.

Consultations on several of these key measures began in 2021. DEFRA confirmed that a UK-wide weekly food waste collection service will be launched in 2023, with the UK Deposit Return Scheme hopefully launched in 2024.

The Government has also committed to develop policies that edge us closer to the elimination of biodegradable municipal waste to landfill from 2028, as part of the UK Net Zero Strategy.

## Environment Act

The Environment Act is used to support the delivery of the UK's 25-year plan for the environment and to clarify how environmental protection frameworks will operate post-Brexit. The Act is used to make provision about targets, plans and policies for improving natural environmental protection.

## EfW as the long-term solution for residual waste

Even if we achieve the UK's target to halve residual waste by 2042 (from 2019 levels), there will still be residual waste that requires disposal. It is critical that this material is treated and disposed of in the most sustainable way possible.

Decarbonised EfW is the only proven long-term solution for sustainably managing residual waste. That's why we continue to work to make EfW as sustainable an industry as possible. From recycling 100% of bottom ash and reusing water in the plant process, to evaluating and pursuing options for carbon capture at our facilities, we are working to ensure that the future treatment of residual waste is as efficient as possible.

\*DEFRA, Environmental Improvement Plan 2023, Goal 5, Maximise our resources, minimise our waste, pg. 142



## Policies on the horizon

### UK Emissions Trading Scheme (UK ETS)

The Government are consulting on whether to expand the UK ETS to cover EfW. This comes out of the Committee on Climate Change 2021 progress report which stressed that Government needs to “address with urgency the rising emissions from, and use of, energy from waste”.

The report recommended that Government consult in 2022 on the introduction of a carbon tax (either as part of the UK ETS or a separate instrument) aimed at curbing rising emissions from energy from waste. The Government is looking at the mid-late 2020s to expand the UK ETS to energy from waste.

### UK Green Taxonomy

The UK Government has proposed a UK Green Taxonomy to serve as a framework for determining which activities can be defined as environmentally sustainable to inform investors investment decisions as they transition their portfolios to Net Zero greenhouse gas emissions by 2050. It is expected to be closely modelled on the EU's Taxonomy Regulation, which came into force in January 2022.

The technical screening criteria (TSCs) for climate change adaptation and mitigation, sustainable use and protection of water and marine resources, circular economy, pollution prevention, and biodiversity – will be finalised by the end of 2023.

EfW technology is part of the solution to creating a national decarbonised waste management sector – working alongside the wider sector to divert recyclable waste streams to recycling plants, while processing residual waste in a way that contributes toward the UK's Net Zero aims.

### Contributing to home grown energy security

The Government's Review of Electricity Market Arrangements (REMA) aims to strengthen energy security, decarbonise the system and improve cost effectiveness.

The UK's EfW infrastructure is a real opportunity to do that. By processing and utilising the country's residual

waste, EfW facilities generate reliable, partially renewable baseload electricity, as well as heat and steam.

In 2021, the UK EfW sector processed 14.9m tonnes of residual waste and exported 8.6TWh of power, contributing approximately 2.8% of the UK's total net generation\*. In the future, private wire and battery storage could create even more options for supporting grid flexibility and local energy demand.

EfW facilities could divert power to produce electrolytic hydrogen, or dispatch electricity flexibly to the grid when required. Allowing us to increase intermittent renewable capacity and support the UK's transition to a Net Zero power grid by 2035.



\* Tolvik, UK Energy from Waste Statistics 2022, May 2023

## EfW's potential to drive decarbonisation

### Decarbonisation strategy

The UK EfW sector can make a critical contribution towards local and regional decarbonisation. EfW facilities already provide partially renewable baseload electricity, heat and steam. And technologies such as CCS and electrolytic hydrogen, will help us further decarbonise the waste sector and contribute towards the UK's target to achieve Net Zero by 2050.

At enfinium, we are looking at technology options to decarbonise our own fleet and to enable the decarbonisation of local homes and industry. You can find out more about that in our Net Zero Transition Plan to be published later in the year.

### Carbon Capture and Storage (CCS)

As recognised by the Committee for Climate Change (CCC), removing greenhouse gases is essential if the UK is to meet its Net Zero target by 2050. If we can capture CO<sub>2</sub> from processing biogenic waste, this will help hard to abate sectors, such as aviation, chemicals and heavy industry decarbonise. But to harness this opportunity, the EfW sector needs to work with government to build clarity on when future support will be available to underpin this investment.

### Electrolytic Hydrogen production

We can power electrolyzers to produce homegrown hydrogen when electricity is not needed by the grid. This will help to reduce the UK's reliance on natural gas and accelerate the decarbonisation of industry, transport and, in future, heating. With the right support mechanisms in place, EfW could be at the forefront of powering a world-leading UK hydrogen economy.

### Heat Networks and private wire to decarbonise local heating networks

We can supply new heat networks, to decarbonise homes and business, as well as utilise steam to power the future of UK industry. The sector already exports 1.8TWh of heat (Tolvik 2022) but only from 11 of the 57 plants operational in the UK. There is a huge opportunity for many more EfW facilities to harness partially renewable energy to heat homes and businesses across the country, helping to tackle one of the most difficult elements of the Net Zero Transition Plan.



# Our progress in 2022

In 2022, we were faced with the challenges of the cost-of-living crisis and the increasingly visible effects of climate change, like record breaking heatwaves and droughts. These events demonstrate yet again why understanding, anticipating and managing ESG matters are key to delivering on our mission to serve our clients, communities and customers.

ESG runs through everything we do at enfinium. So it is important that we regularly assess and identify emerging ESG issues that could have an impact on our business or the people we work with. That is why we are always talking to experts from across our business and analysing feedback we receive from regular discussions with our customers, suppliers and the wider community. We also closely monitor policy, regulation, disclosure standards and industry best practices.

The performance measures we identified and set in 2021 across our environmental, social and governance workstreams remained the same in 2022. We have however, enhanced the reporting for each of these areas, drilling down to give even more detail. This will allow us to assess, monitor and improve our ESG performance year-on-year.

The performance measures were as follows:

ENVIRONMENTAL

- Scope 1, 2 and 3 CO<sub>2</sub> emissions
- Net carbon benefit of operations
- Net electrical efficiency
- R1 efficiency calculations
- IBA and APCr recycling rates
- Metals recovery rates from IBA
- Biodiversity scores and net gain
- Water usage and recycling / harvesting
- Emissions performance against permit limits

SOCIAL

- Health & Safety RIDDOR / LTIFR rates
- Health & Safety - Safety observations and inspections
- Apprenticeship programme recruitment
- Employee engagement survey scores
- Customer satisfaction survey scores
- Community fund investments
- Diversity statistics
- Gender pay gap reporting

GOVERNANCE

- Supplier evaluation completion
- Compliance training completion
- Non-executive director representation
- Board meeting attendance
- Cyber security risk scores
- Climate related risk assessments
- Direct and indirect tax contributions



One of the highlights of 2022 for our enfinium ESG working group, was an 'away day' at the Knepp Rewilding Project in West Sussex, an internationally renowned rewilding and biodiversity project.

The visit was a brilliant opportunity for the team to reflect on what has been achieved over the last year and, more importantly, share ideas and plan what we can work on throughout 2023 and beyond.

Spending time at Knepp was the perfect reminder of why our stewardship of the land and environment is so very crucial to our business - and to each of us personally.





# Our Horizon strategy

We frame our business activities through three horizons that guide our pathway to decarbonisation



## THREE HORIZONS

### HORIZON 1

Ferrybridge 1  
Ferrybridge 2  
Kemsley  
Parc Adfer

**Horizon 1** is our day-to-day focus on safety and operational excellence and how we are maintaining and refining our core business to ensure we are:

- Delivering what we say we will do every year.
- Innovating from the bottom up to get the most from our existing performance.
- Expanding and growing from within using our expertise and know-how to continually do things better and outperform our competitors.
- Setting ourselves stretching targets so that we keep improving.

### HORIZON 2

Skelton Grange  
Kelvin  
Heat and steam offtake  
Private wire  
Ferrybridge rail

**Horizon 2** is our emerging business and our investment and development into new technology, products and services.

For this horizon we are focusing on our capabilities, assets and systems, including the two facilities we currently have under construction.

### HORIZON 3

Carbon capture, utilisation and storage  
Electrolytic hydrogen  
Waste decarbonisation  
Net Zero Transition Plan

**Horizon 3** is our long term strategy to build the future of waste treatment for the Net Zero economy.

Where we have no current footprint but we can see or create a bridge to help us facilitate the decarbonised infrastructure for the future.



# HORIZON 1

WHERE WE OPERATE

For Horizon 1, our main objective is to maintain the safety, operational and environmental performance at our energy from waste facilities at Ferrybridge 1 and 2, Kemsley and Parc Adfer.

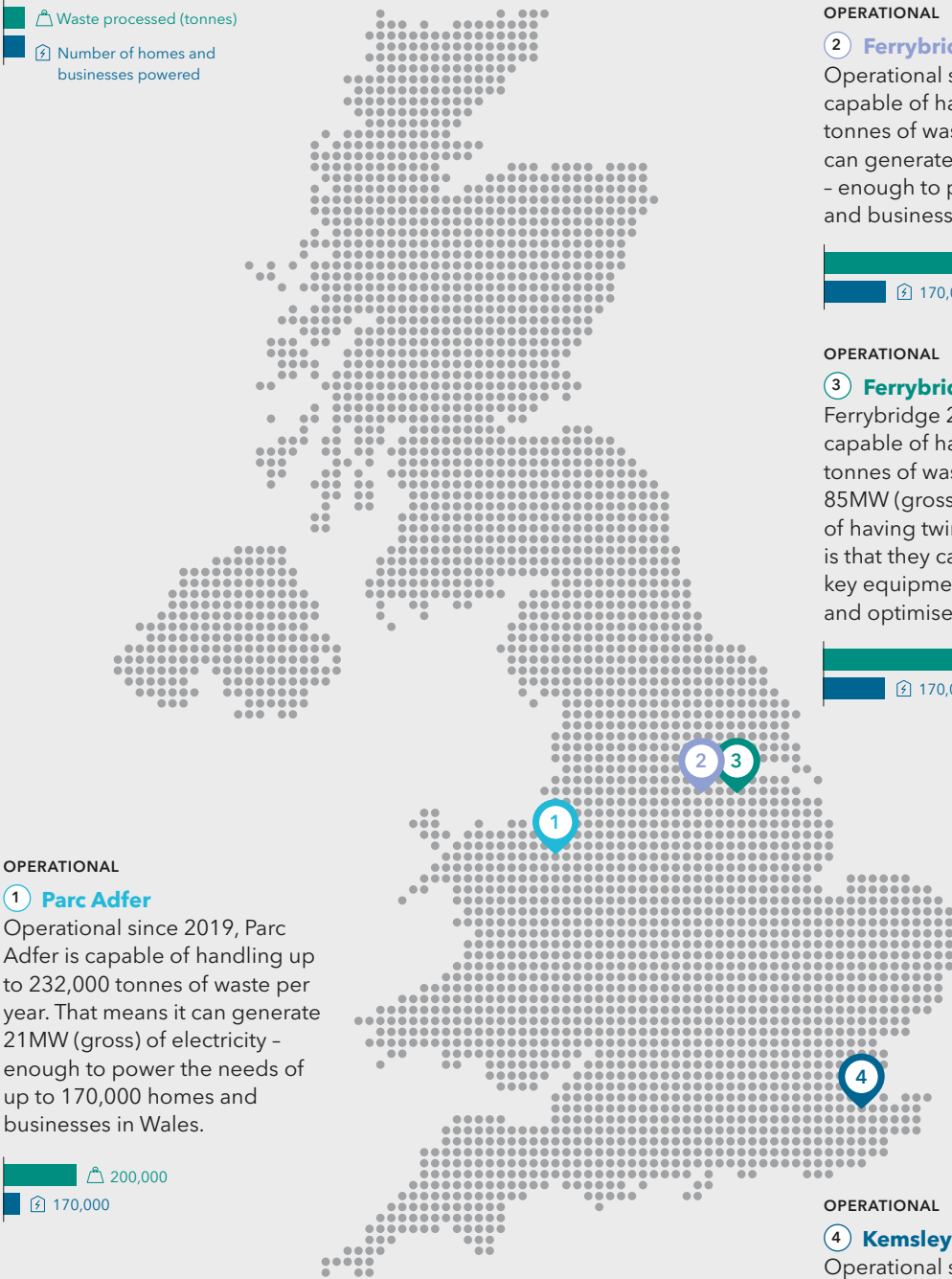
This year, we have made great progress in this horizon, as some of the following information and stories will show you.





# Our facilities

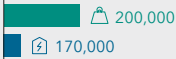
Waste processed (tonnes)  
Number of homes and businesses powered



OPERATIONAL

1 **Parc Adfer**

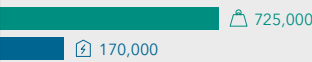
Operational since 2019, Parc Adfer is capable of handling up to 232,000 tonnes of waste per year. That means it can generate 21MW (gross) of electricity – enough to power the needs of up to 170,000 homes and businesses in Wales.



OPERATIONAL

2 **Ferrybridge 1**

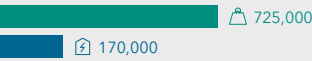
Operational since 2015, Ferrybridge 1 is capable of handling up to 725,000 tonnes of waste per year. That means it can generate 85MW (gross) of electricity – enough to power 170,000 UK homes and businesses.



OPERATIONAL

3 **Ferrybridge 2**

Ferrybridge 2 opened in 2019 and is also capable of handling up to 725,000 tonnes of waste per year, generating 85MW (gross) of electricity. The benefit of having twin facilities on the same site is that they can share infrastructure and key equipment, help to limit downtime and optimise fuel supply.



OPERATIONAL

4 **Kemsley**

Operational since 2020, Kemsley is capable of handling up to 657,000 tonnes of waste per year. That means it can generate 74MW (gross) of electricity – enough to power the needs of up to 160,000 UK homes and businesses.



Ferrybridge 1



Ferrybridge 2



Parc Adfer



Kemsley





# Driving progress at Ferrybridge



## Reducing dust

Environmental Management Systems (EMS) at our facilities continuously monitor our operations for emissions, especially dust which is one of six emissions levels that are actively managed. In December 2023, BREF will introduce tighter standards, lowering the acceptable limit to  $5\text{mg}/\text{Nm}^3$ .

We use filter bags to extract dust particulates from flue gas. These typically have a lifespan of three to four years and needed to be replaced on lines one and two of our flue gas treatment plant. This replacement work reduced dust levels from  $8\text{ mg}/\text{Nm}^3$  to  $0.2\text{ mg}/\text{Nm}^3$ , a significant improvement.



## Saving water

We have reduced borehole water usage by  $65,000\text{m}^3$  by changing over our operation procedures and efficiency.

As well as reducing water usage, there are additional benefits of now being able to process more waste with a lower calorific value and reduce nitrogen oxide (Nox) emissions.



## Building an inclusive culture

Team working is a fundamental part of life at enfinium, and this was given a boost in 2022 through two off-site events.

Steve Tosney, Plant Manager told us, "We held two teambuilding days for all Ferrybridge 1 and 2 employees. At each event we had around 60 employees, working together to accomplish tasks which ranged from blindfold driving, archery, bridge building and riding powerturn buggies. The team work on display at these events have helped us operate as One Team back at the facilities".



## Case study: Helping to put food on the table



enfinium has supported and worked with Knottingley Foodbank for more than six years – in fact since the Ferrybridge facilities were in construction.

We donate £10k annually and our teams volunteer time to support the foodbank, giving our food to those in need in the local community.

The Knottingley Foodbank is part of a nationwide network of over 1,300 foodbanks supported by the Trussell Trust. It is working to combat poverty and hunger across the UK and believes that no one in the community should have to face going hungry.

Our facilities and the foodbank are just a few miles apart and both in the Wakefield ward, one of the most deprived local authorities in the country. Due to the cost-of-living crisis, an increasing number of residents are going to the foodbank for help.

Our [Impact Report](#) explains more about enfinium's contribution to the local economy.

"I want to extend our gratitude to all at enfinium. Times are hard for many in the UK and many people rely on our services for basic essentials, especially as we go into the tricky winter months. However, we can only provide our services due to the generosity of the general public and companies like enfinium.

It's not an exaggeration to say that without this form of generosity, we would simply not be able to operate. From all at Knottingley Food Bank, thank you."

Nick Levey,  
Treasurer, Knottingley Food Bank



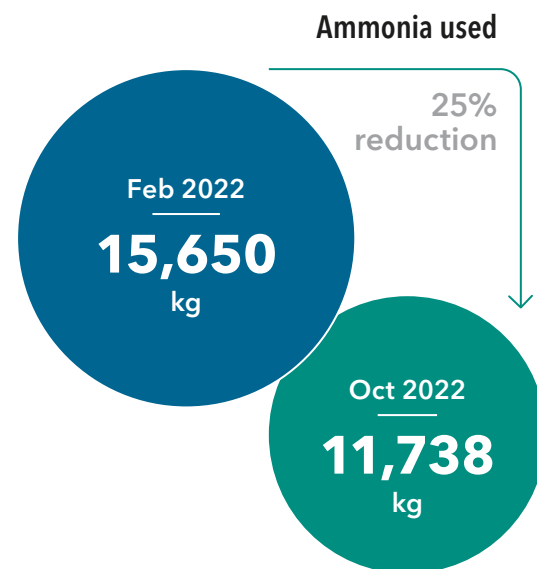




## Cutting ammonia usage

Ammonia is injected into our furnace to reduce NOx emissions, but it is produced in ammonia chemical production plants that are powered by natural gas. So, anything we can do to reduce the amount of ammonia we use is beneficial to the environment.

After carrying out a short technical study, we realised that if we altered the air flow within our furnace, and replaced fresh air with recycled air, our ammonia consumption could be reduced. In fact, the use of recycled air has resulted in a 25% reduction in the volume of ammonia used within our facility over a 9-month period.



## Leading the charge

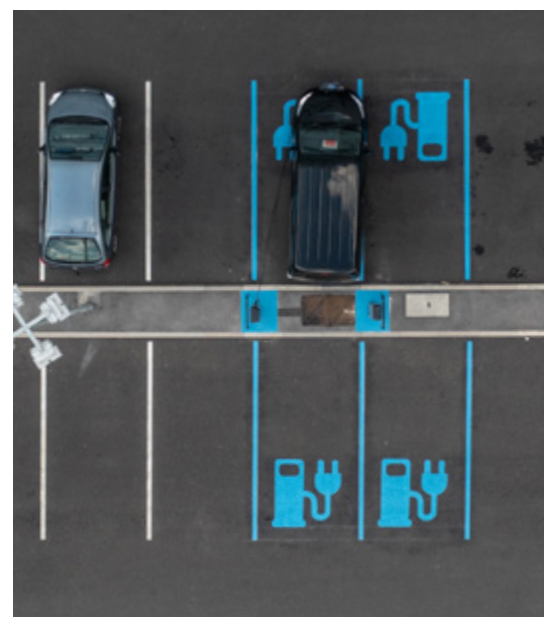
While electric vehicles (EVs) are becoming more popular, one of the biggest obstacles for would-be converts is running out of power, with no charging point nearby. To solve this problem for our employees, contractors and visitors, we have now installed EV charging points at all enfinium operational facilities.

We already had four EV charging points at both our Ferrybridge 1 and Parc Adfer facilities. So in 2022, we switched on four additional ones at Ferrybridge 2 and Kemsley. The 22 kW chargers are three times faster than the standard domestic 7 kW version - and can bring a car battery back to full after just a few hours.

Next year, we plan to add a further four charging points at both Ferrybridge 1 and 2 so we can ensure supply matches demand as EV adoption accelerates. Ultimately, all enfinium employees can charge while at work.

“Our ESG commitment extends to our employees playing their part in the race to Net Zero. Free electric vehicle charging at our facilities helps to raise climate change up the agenda.”

Tom Darby  
HR Director







## Case study: enfinium Ferrybridge and O.C.O Technology APCr processing partnership

O.C.O Technology recycles enfinium Ferrybridge APCr generated as a by-product of the energy from waste process into carbon neutral sustainable aggregates for use in the construction sector

In 2018, enfinium and O.C.O Technology entered into a 10-year agreement to take the APCr from enfinium Ferrybridge 2. Sample testing of the APCr is conducted before it leaves the Ferrybridge facility to identify the density, salt and metals content of the material. The APCr is then transported from Ferrybridge by powdered tankers to the O.C.O processing plant on the outskirts of Leeds, approximately 14 miles from Ferrybridge.

The APCr received is tested once again at O.C.O on-site labs where chloride, density and moisture levels are checked, which takes approximately 15 minutes. APCr product is then unloaded from the powdered tankers into separate high- and low-density silos. High- and low-density APCr are blended to produce a standard recipe for the next stage of the process.

The blended APCr goes into a "stage 1 mixer", where carbon dioxide and water are added to carbonate the material. A second mixer then combines the carbonated APCr with additional reagents. A pelletiser then converts the materials into pellets in carbonate form. The pellets are cured along a conveyor belt before being stored outside for 24 hours in curing bays, where the materials take in atmospheric carbon dioxide from the air to harden further.

The products are screened into different sizes for different customers and end-use. The aggregates produced are used in the

construction sector for foundation concrete, asphalt and to produce masonry blocks. O.C.O aggregates capture more carbon than they release into the atmosphere and hold an end of waste licence from the UK's Environmental Agency.

In 2022, O.C.O recycled over 24,000 tonnes of APCr from enfinium's Ferrybridge facility, capturing 2,400 tonnes of carbon dioxide - the equivalent of 112,300 trees and the breeze blocks produced as a result saved 84,205 tonnes of virgin aggregate from being used.



**100%**

of APCr from Ferrybridge 2 is recycled. That means nothing going to landfill.



**24,000 tonnes**

of APCr recycled by O.C.O Technology from the Ferrybridge facility in 2022.



**2,400 tonnes**

of carbon dioxide captured - which is equivalent to the work of 112,300 trees.



## Education and engagement at Kemsley

### Combined heat and power

Kemsley is a combined heat and power facility. High pressure steam from the combustion is used to drive the steam turbines, producing heat and electricity for local homes and businesses.

The DS Smith Kemsley paper mill, located adjacent to our Kemsley facility is the largest mill for recycled papers in the UK and the second largest in Europe. A gas turbine within the paper mill generates heat and power for its paper manufacturing process. Since July 2020, our Kemsley facility has provided steam generation to the mill. In 2022, we exported 432,413 tonnes of steam, up from 230,678 tonnes in the previous year, significantly reducing the mill's reliance on natural gas usage.

Although the paper mill uses its own gas turbine to generate heat and power for the manufacturing process, the steam from Kemsley means it needs to be used much less.

### Working with our waste suppliers

Our Kemsley facility takes municipal solid waste (MSW) and commercial and industrial (C&I) waste – or so-called 'black bag' waste – from over 45 transfer stations across Kent, London and the wider Southeast region.

The role of the transfer stations is to ensure that black bag waste is screened, so that inappropriate items, such as batteries can be removed. But it doesn't always happen. In fact, in 2021 we lost 22 days of processing time because unacceptable waste blocked ash dischargers, bunkers and hoppers. And that's despite us conducting regular site inspections at our own and supplier facilities to try to prevent this from happening.

In 2022, we decided to try two new ways to inform and educate our waste suppliers – all in an attempt to reduce our downtime. Many of our waste suppliers have never visited an EFW facility, so have little understanding of the challenges we face around unacceptable waste. That is why we invested in producing [a short three-minute video](#) called No BEARS, to explain it more clearly.



2022

2021

In 2022, we exported

**432,413**  
tonnes of steam  
to the DS Smith paper mill.

An increase of

**201,735**  
tonnes of steam  
from 2021.



## Case study: No BEARS

Getting to know the unacceptable waste items:

### Bulky items

Things that cause blockages, including concrete blocks, rolls of carpet and underlay, tree trunks, telegraph poles, mattresses and crushed 1,100-litre bins.

### Explosives

Items that can cause explosions like gas cylinders, nitrous oxide canisters, pressurised cans, fire extinguishers and batteries.

### Anything baled

Items that are too big and too dense to process.

### Reels

Whether that is paper, plastic or compressed materials.



"Thank you and your wonderful team for hosting us. We have thoroughly enjoyed seeing your processes in real life and gained more insight on the issues surrounding No BEARS."

"An informative day and makes us feel proud as a company to be working with such a wonderfully run local operation."

"Extremely useful. Thank you!"

## Suppliers' Open Day

To actively engage with our waste suppliers and reinforce the themes in our video, we invited them to join us at our Kemsley and Ferrybridge facilities over two days in November.

More than 140 transfer station supervisors and loading shovel supervisors were invited on a site tour to learn more. Also, to hear first-hand from the operation and maintenance teams at specific pinch points, how unacceptable waste can shut down operations.

We received very positive feedback. A number of waste suppliers were astonished by the impact that these unacceptable waste items can have on a EFW facility and said the tours really helped them recognise the size, scale and complexity of our operations.

The No BEARS video and Suppliers' Open Days were a direct result of last year's customer feedback. Insights from this year's survey will inform the work we do in the coming year.



## Opening doors at Parc Adfer



### Family Day

There is a strong team environment at Parc Adfer, and this was clearly evident when the facility held a Family Day in September. It was a chance for employees, contractors and their families to come together and learn more about the part that everyone plays here.

Over 60 people came along and had lots of fun thanks to the bug man who came with lots of fascinating creatures including an owl, the bouncy castle, ice cream van and pick and mix sweet stall. There was a short safety-first tour of the control room and boiler house. Then guests enjoyed exploring the visitor centre, complete with its fun and interactive models.



### Partnering with the community

The facility is operated by enfinium as a Public-Private Partnership (PPP) with support from the Welsh Government, to serve the five local authorities that make up the North Wales Residual Waste Treatment Partnership. These are Conwy County Borough Council, Denbighshire County Council, Flintshire County Council, Gwynedd Council and the Isle of Anglesey County Council.



### Visitor Centre opening

As we finally started to emerge from Covid-19, we were once again able to open our Parc Adfer Visitor Centre – the first time since 2019. The first group of visitors to come through the door came from the Third Age Trust (U3A), a voluntary group with over 400,000 members.

The group were welcomed into our facility to learn more about the role of Parc Adfer in the community. They were given an introductory presentation including a video of our energy from waste process, then invited to visit the interactive exhibitions and take a short tour of the plant.

The feedback received was very positive, with many U3A members eager to learn and understand more about how our process provides safe waste management and critical infrastructure for the UK's energy security.



"We were impressed with the technology and the new plant processes."

"We liked the 'playroom' and could have spent hours in there. It will be a great place for school children to learn about waste materials and recycling."

"Great facilities for visitors and a well presented talk and film with the opportunity to ask questions."

"I felt very reassured about energy from waste plants being the way forward for councils to dispose of domestic waste rather than landfill."



# Case study: North Wales Wildlife Trust partnership

Following the biodiversity assessments across our sites (see page 17), we began a new partnership with the North Wales Wildlife Trust in 2022 to enhance the biodiversity of the landscape around Parc Adfer and support the natural environment.



Our first work with the Trust was a 12-month project of woodland management at Y Graig Nature Reserve. We chose this project to improve Y Graig for wildlife and people alike – on the grounds that engaging people with an area’s wildlife is vital to its long-term biodiversity.

In total, we committed £18,000 in funding to get the project started – beginning with habitat improvement and monitoring, as well as enhancements to access and information about the area.

Our work with the North Wales Wildlife Trust included manual grassland habitat management

with wildflowers, orchids and thyme, protected from bracken, gorse and heathers.

Improvements also had to be made to fences and gates as Y Graig’s grassland is grazed by Hebridean sheep from late summer into the winter. Volunteers also helped out with wildlife monitoring by undertaking regular surveys to identify and improve habitat formations.

In December 2022, enfinium volunteers also joined two North Wales Wildlife Trust rangers to help with woodland management and tree safety work.



## Landscaping at Parc Adfer

Our partnership with the North Wales Wildlife Trust was extended to include a landscaping contract at our Parc Adfer facility to enhance the local ecosystem and surrounding biodiversity.

The ‘Living Landscape’ contract includes habitat monitoring, invertebrate surveys, reptile re-establishment, bat and bird boxes, as well as less active, intrusive management of the ecology and land to encourage wildlife development.





# HORIZON 2

## OUR FUTURE ASSETS

For Horizon 2, our main objective is to invest in new facilities, adding capability, assets and systems to our fleet.

That's happening right now, with the construction of Skelton Grange in Leeds and Kelvin in West Bromwich.



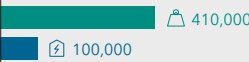


# Sites under construction

- Waste processed (tonnes)
- Number of homes and businesses powered

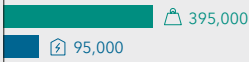
UNDER CONSTRUCTION

**1 Skelton Grange**  
This large dual line combined heat and power plant is currently under construction. When it becomes operational in 2025, it will have the capacity to process 410,000 tonnes of municipal solid waste (MSW) and commercial & industrial waste (C&I) per year from local authority collections. This will generate 49MW (gross) of electricity.



UNDER CONSTRUCTION

**2 Kelvin**  
Also due to become operational in 2025 is Kelvin, a single-line combined heat and power plant. The facility will be able to process 395,000 tonnes per year of MSW and C&I waste from local authority collections and generate 44MW (gross) of electricity – that’s equivalent to powering more than 95,000 UK homes.





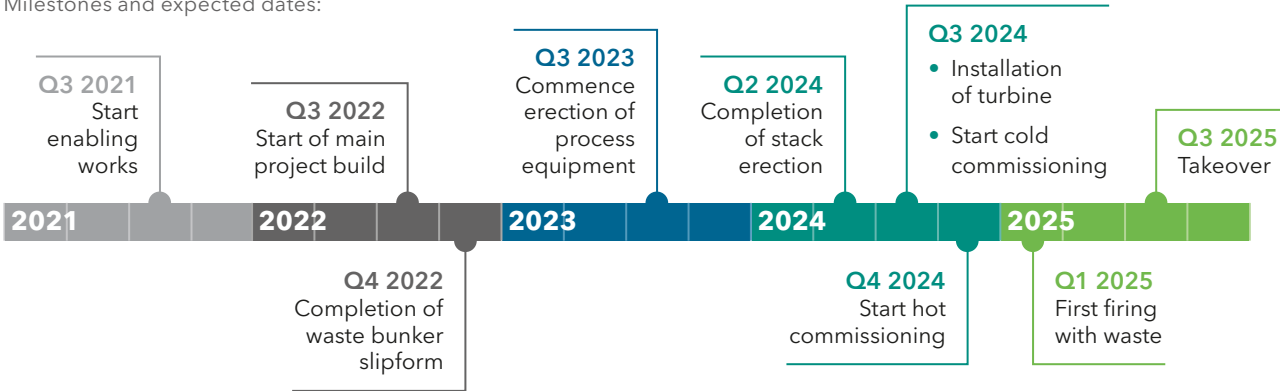
# A new future for Skelton Grange

Our new Skelton Grange facility is on the site of two former coal-fired power stations. The two plants were decommissioned in the 1980s and 1990s.

In 2018, enfinium acquired land to build a large dual-line energy from waste plant, and finally became proud owners of the site in 2021. Last year, work began clearing the site and carrying out ground works before full construction commenced in September 2022.



Milestones and expected dates:



## Putting the environment first

Right from the start of the project, environmental considerations have been front and centre of our work plan. Before arriving at the site, all employees and contractors have completed an induction covering a health and safety briefing, an update on site progress and the main risks to watch out for. But it also included additional environmental training including waste, spills and lessons learnt from other major projects in the UK and beyond.

We also brought ecologists to the site to watch for reptiles as we removed rubble and plants during the enabling works. No reptiles, amphibians were spotted in the construction area, and no nesting activity was observed. However, throughout the year, ecological calculations were carried out to ensure we were working compliantly. And these all adhered to BREEAM, the world's leading science-based suite of validation and certification systems for sustainable built environment.



## Working with the local community

The Skelton Grange Community Liaison Committee was established at the start of the project. It is made up of enfinium representatives, local councillors from the six wards surrounding the site, the Environment Agency and local planning officers. It meets regularly to review progress and discuss issues of interest, and forms an important link between enfinium, our contractors and the community.



## Case study: Sustainable construction using recycled concrete

Many construction projects require some sort of demolition work during their early stages, possibly clearing concrete foundations, buildings, driveways or walls. This results in large amounts of heavy materials that usually go to waste - when many could be recycled and reused.

In the case of Skelton Grange, we had to demolish the old cooling tower bases and other concrete structures from the old power station, as well as carrying out groundworks to produce a construction platform for the new energy from waste plant.

So, working with engineering, procurement and construction (EPC) contractor, Hitachi Zosen Inova, we managed to recover and crush almost 100,000 cubic metres of existing concrete and rock. We estimated that in the building of Skelton Grange, we would use over 160,000 tonnes of aggregate. So the recycled concrete we reclaimed from the original site was used instead, to make the concrete construction material.

### The benefits of reusing concrete



Avoid sending concrete to landfill



Reduce the need for new aggregate materials



Lower emissions associated with transporting concrete to the site

We've been able to reuse:

**26,525m<sup>3</sup>**  
Mudstone

**38,932m<sup>3</sup>**  
Processed concrete used as fill

**15,000m<sup>3</sup>**  
Processed mudstone stored for future use

**19,306m<sup>3</sup>**  
Processed concrete stockpiled for future use

**99,763m<sup>3</sup>**  
Total



# Case study: Support for Leeds Rowing Club



During the construction phase of Skelton Grange, £50,000 has been made available to community groups and organisations in Leeds.

One such group to benefit from the Skelton Grange Community Fund in 2022 was the Leeds Rowing Club who are based out of their Stourton Boathouse, not far from our facility.

The Leeds Rowing Club has been working with schools across Leeds and Wakefield to introduce rowing to young people from disadvantaged areas or where they wouldn't normally get involved in such an

activity. All to widen participation and diversity in rowing, especially at a junior level.

The funding meant the club could buy four sets of oars for a quad rowing boat, allowing many young people to take part in a sport that would otherwise not be accessible to them. It is also providing swimming lessons as part of the club's development programme and supporting junior rowers to train for competitions that take place across the country throughout the year. Some will get to represent the city of Leeds at a national level.

"Thank you again for your generous funding. The club is very grateful, and your support will make a big difference to our junior rowing academy"

David Cottrell  
Leeds Rowing Club

Our Skelton Grange Community Benefit Fund is open to any group or organisation in Leeds that can demonstrate they are doing one or more of the following:

- Providing environmental benefits such as the promotion of clean energy, waste reduction or recycling improvements
- Improving standards of health, safety and wellbeing
- Enhancing the wider community through educational development, environmental improvements or activity that helps boost community cohesion.



## Building relationships with the local supply chain

Major infrastructure projects such as the development of enfinium Skelton Grange are vitally important to the communities they serve - not least because they create a significant number of jobs and supply chain opportunities for local businesses.

That's why in July 2022, enfinium ran a 'Meet the Buyer' event, part of our long-term commitment to engage with local businesses and identify how we can work with the community to make a lasting and impactful difference to the people that live and work in the area. And of course, also

to help us secure the goods and services we will need throughout the Skelton Grange project.

The event at Leeds Civic Hall, aimed at building relationships with local businesses in the Leeds and Yorkshire region as part of the Skelton Grange project. This event, held in conjunction with EPC partners HZI and sub-contractor Careys, was also very well attended by local business figures and gave them the opportunity to explain how their goods and services could put them in prime positions to be part of the local supply chain for the Skelton Grange project.



enfinium staff chat with local companies and businesses at the Skelton Grange Meet the Buyer event at Leeds Civic Hall.



# Investing in the community at Kelvin

## Building relationships with the local supply chain

Similar to the event in Skelton Grange, enfinium ran a 'Meet the Buyer' event, to engage with local businesses and identify how we can work with the community to make a lasting and impactful difference to the people that live and work in the area. And of course, also to help us secure the goods and services we will need throughout the Kelvin project.

The event, organised alongside ACCIONA, enfinium's EPC (Engineering, Procurement and Construction) partner on the project, took place at the Sandwell College campus. Representatives from dozens of different local companies and businesses attended the event, each looking to find out more about the long-term plans for the site and to see where they might be able to assist and fit into the supply chain process as we construct and develop the enfinium Kelvin energy from waste facility.

Businesses and organisations from across the West Midlands region assembled at Sandwell College to find out more about the Kelvin project.

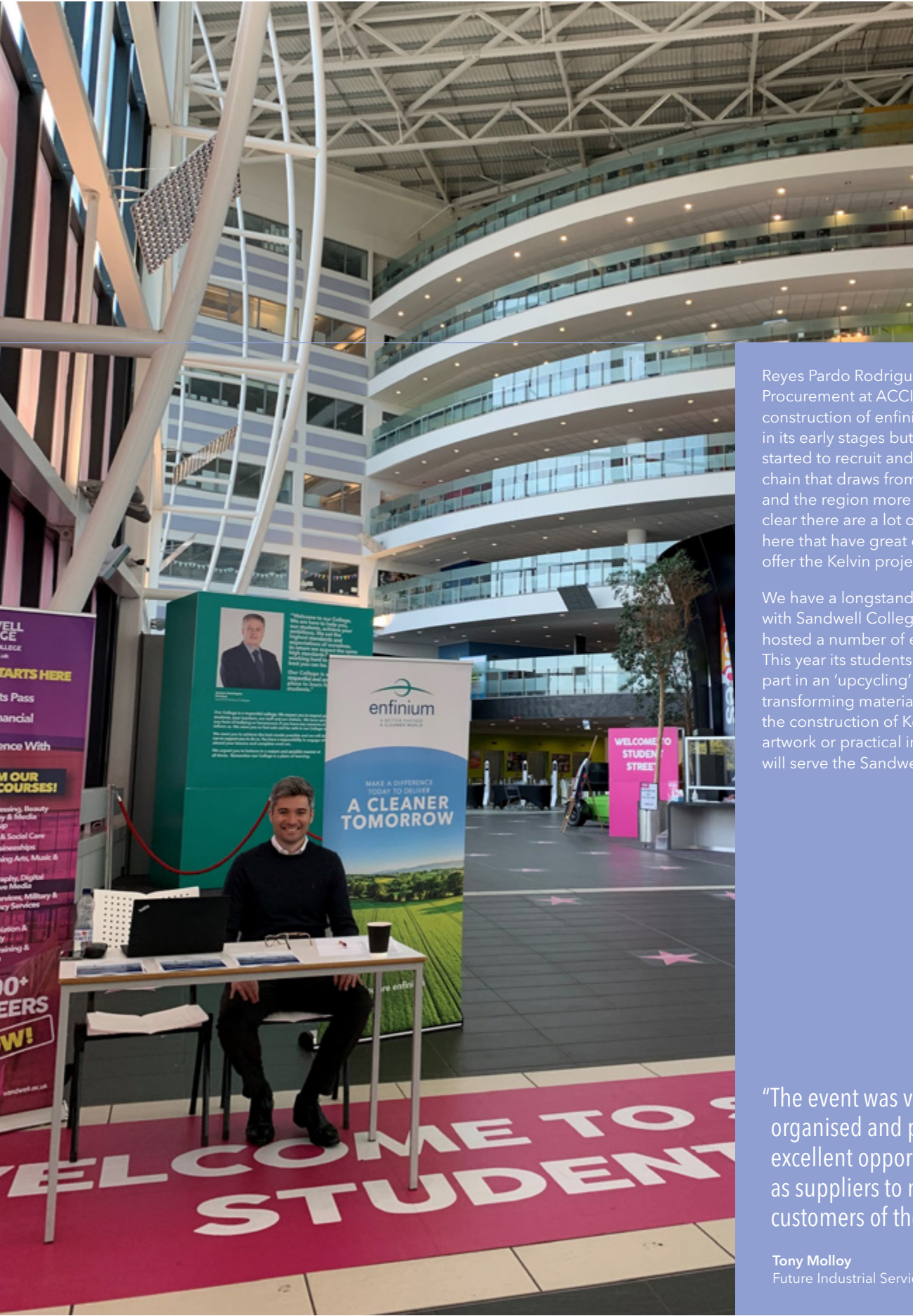
On the day, experts and senior staff from enfinium and ACCIONA, including the Project Manager for the Kelvin site, met with local workers in a series of breakout sessions. The day was split into two, with the morning dedicated to hearing from organisations interested in the construction and civil engineering opportunities, and in the afternoon, discussing openings for ancillary and site support services further along in the construction timeline.

The relationships built in the earliest stages of the project, such as with Sandwell College, are crucial to creating lasting partnerships that will see enfinium remain a lasting and important figure in the Sandwell and West Midlands community. This is a key principle of our approach to community engagement and is reflected in the close ties that the company has in every region it operates.



"It was a great pleasure meeting you again today and thank you for your time. We look forward to exploring the potential partnership, for both your current facilities and future facilities as you grow your market presence in the near future."

Richard Thomson  
Chairman, Thomson Group Engineering



Reyes Pardo Rodriguez, Head of Procurement at ACCIONA, said, "The construction of enfinium Kelvin is still in its early stages but we've already started to recruit and build a supply chain that draws from West Bromwich and the region more generally. It is clear there are a lot of businesses here that have great experience to offer the Kelvin project."

We have a longstanding association with Sandwell College, and they have hosted a number of events for us. This year its students will also take part in an 'upcycling' project, transforming materials left over from the construction of Kelvin into public artwork or practical installations that will serve the Sandwell community.

"The event was very well organised and provided an excellent opportunity for us as suppliers to meet local customers of the future."

Tony Molloy  
Future Industrial Services





## Kelvin litter picking engagement day



Protecting the environment sits at the heart of everything we do at enfinium. But it really is a team effort.

As part of an ongoing initiative to help clean and improve the local waterways, a group of employees took part in a litter picking engagement day on the 7<sup>th</sup> June 2022.

In partnership with the Canal & River Trust, staff spent the day picking litter and recycling discarded plastics along a stretch of local canal in the Galton Valley area. Everything they found could cause harm to the local environment and wildlife, so this work will make a real impact.

Chris Swanick, enfinium Kelvin Project Manager, said "It was fantastic for staff to be able to get involved in the hands-on cleaning of the local Birmingham Main Line Canal. An important and iconic part of the Sandwell region. It was rewarding to see so much litter and recyclable material cleared from the canal and towpath, but there is still so much more that can be done."

The Birmingham Main Line Canal runs for over 15 miles through the centre of Birmingham and out to Wolverhampton via surrounding areas such as Smethwick, Dudley, and Tipton. The canal is managed and maintained by the Canal & River Trust, a nationwide charity who aim to transform canals and rivers into spaces where local people want to spend time and feel better.

Tara Sexton, volunteer leader at Canal & River Trust, said: "It was great working with enfinium on this project and we look forward to collaborating with them again. There's still work to do to improve our local canals though. There are lots of ways that organisations and individuals can get involved to help transform these historic waterways, so we'd encourage everyone to find out more and join in!"

"It was fantastic for staff to be able to get involved in the hands-on cleaning of the local Birmingham Main Line Canal. An important and iconic part of the Sandwell region."

Chris Swanick  
enfinium Kelvin Project Manager





# HORIZON 3

## PLANNING FOR THE FUTURE

Horizon 3 is focused on building the future of waste treatment for the Net Zero economy.

This is an area that is crucial if we want to discover new and innovative options to build a sustainable future for all of our communities.



**Over £500,000**

spent on prefeasibility studies in 2022





# Using waste to drive the Net Zero Economy

The UK needs to decarbonise the economy, bolster homegrown energy security, and promote waste efficiency solutions.



At enfinium, with our facilities across the UK and our Decarbonisation Hub proposition, we are well positioned to support the UK Government and leverage additional value from our energy from waste infrastructure.

Our vision is to create local Decarbonisation Hubs, powered by the nation's waste. Using our existing EfW infrastructure, we have the potential to deliver net negative emissions with carbon capture, utilisation and storage (CCUS), and to produce electrolytic hydrogen, provide heat networks, private wire and intermittent power as the grid evolves.

To make our vision a reality, we are investing time and money to help us understand how CCUS can work for our facilities, while evaluating a number of non-CCUs decarbonisation solutions in the shorter term.

In 2022, we made good progress with pre-feasibility studies to identify technology options that could be delivered on a site-by-site basis. Our Net Zero Transition Plan that will be published later this year will explain more.

March 2022	October 2022	November 2022	2023	Beyond
<b>March 2022</b> Joined the Carbon Capture and Storage Association.	<b>October 2022</b> Completed first stage of pre-feasibility work for Carbon Capture technology options and electrolytic hydrogen production for each enfinium facility.  <b>October 2022</b> Explored heat supply and private wire options for each enfinium facility.  <b>October 2022</b> Completed concept study for Parc Adfer CO2 Pipeline Connection to HyNet.	<b>November 2022</b> Joined the Bacton Thames Net Zero Cooperation Agreement.	<b>2023</b> Third-party modelling of Net Zero pathways for enfinium (Scope 1 and 2).  <b>2023</b> Publication of enfinium's Net Zero Transition Plan.	<b>Beyond</b> Next stage of pre-feasibility work will explore areas relating to business models, technology, transport and storage, and utilisation pathways.



## Carbon capture, utilisation and storage (CCUS)

CCUS technology offers the potential to capture CO<sub>2</sub> emitted from our EfW facilities and reuse or store carbon through utilisation and storage schemes. It is technology that will play a vital role in helping the UK meet its target to achieve Net Zero by 2050.

In the last year, we have invested in pre-feasibility work to determine CCUS options for each of our facilities. Early-stage analysis completed in 2022, included evaluation of technology options, basic designs, capital requirements and operating costs. The results confirmed that viable technology exists, and carbon capture is technically feasible at all existing enfinium facilities.

For each site, the success of CCUS will depend on a reliable transport and storage network.

## Electrolytic hydrogen

We are also evaluating electrolytic hydrogen production options at our EfW facilities. This method of hydrogen production uses electricity to split water into hydrogen and oxygen, using a process called electrolysis.

Hydrogen production offers multiple benefits, including decarbonisation of industry and transport, for example by replacing diesel as a fuel. For our EfW facilities, the ability to alternate between power export and hydrogen production can provide opportunities to maximise the value of the partially renewable power we generate, whilst facilitating carbon savings for the wider sector.

Prefeasibility work completed in 2022 explored the best available technology for EfW-derived electrolytic hydrogen, amongst other factors. Our early-stage analysis shows that electrolytic hydrogen production is technically feasible at all enfinium facilities, although additional land may be required for large scale production at some sites, depending on the end use (such as transport or industry). This is very exciting as EfW-derived electrolytic hydrogen has the potential to be competitive with green and blue hydrogen.

## Heat supply and private wire

We are exploring the opportunity to develop heat networks. Heat offtake from our EfW facilities can be used in industrial processes or in district heating schemes to decarbonise industry and local heating networks.

Private wire to local industrial users, is another way to provide heat supply and would bring commercial benefits in terms of reduced costs and greater efficiencies, increasing earnings per unit of power generation.

In 2022 we carried out a feasibility study which identified no barriers to heat supply from enfinium sites, and our facilities are all located close enough to potential offtakers.

For further information, see enfinium's Net Zero Transition Plan.





# ENVIRONMENTAL

## Environmental performance

Our ESG environmental strategy focuses on achieving four ambitions. All designed to ensure we have a beneficial effect on the world around us.

### Environmental protection



Ensure we protect biodiversity, ecological areas and associated ecosystem services, such as food, air and water.

### Climate change



Work towards lower greenhouse gas and emissions to help meet reduction targets and Net Zero aspirations.

### Air quality management



Effectively monitor and remediate air pollution (SOx, NOx and other air emissions) as well as other on-site pollution and emissions.

### Sustainable resources



Manage land and water resources effectively, encourage recycling and use resources sustainably wherever possible.

## Environmental protection

To ensure our business can continue to grow without harm to the environment, we are strong proponents of Biodiversity Net Gain (BNG), a recognised approach to development that leaves biodiversity in a better state than before.

BNG provides us with a framework that supports our activities on a site, helping us to measure our positive impact on biodiversity and deliver improvements through habitat creation or enhancement, while avoiding or mitigating harm.



## Biodiversity assessments\*

We have conducted biodiversity assessments across all our sites. Biodiversity units were calculated using criteria listed in DEFRA's biodiversity 3.1. DEFRA biodiversity metric 2.0 was used to ensure continuity of habitat condition assessment in 2022. These assessments confirm the land in and around our facilities have valued ecosystems and structures that we must protect. By producing ecology and biodiversity enhancement plans, we can ensure that we improve year-on-year.

### These plans include:

- Annual habitat condition surveys, completed by independent ecologists
- Daily checks of habitat conditions
- External noise monitoring surveys around the facilities (within 800m radius)
- Service agreements with landscape contractors to ensure land management.

\*DEFRA, Natural England, Biodiversity Metric 2.0, 3.0, 3.1



# Effective air quality management

Effective air quality management (SOx, NOx and other air emissions) remain a key ESG issue.

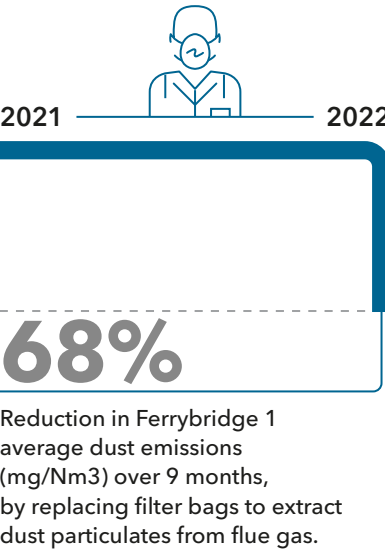
All our facilities are ISO 14001 accredited. This internationally agreed standard for environmental management systems (EMS) is used by organisations to manage their environmental responsibility in a systematic manner.

Our accredited EMS ensures we satisfy the requirements for:

- Compliance with environmental permits, consents, licences, and legislation
- Management, training and competence of personnel
- Fitness for purpose of monitoring methods
- Maintenance and calibration of monitoring equipment
- Quality assurance of monitoring
- Environmentally sound procurement of goods and services
- Minimisation of waste and compliant management and disposal of any wastes produced
- Carefully managed design, operations and modification of the process
- Regular review of continuous improvement

Through the EMS and in accordance with our environmental permits, we continuously monitor our operations for emissions of dust, total organic carbon (TOC), hydrogen chloride (HCl), sulphur dioxide (SO<sub>2</sub>), carbon monoxide (CO) and nitrogen oxides (NOx). See figure 1. NOx trials are being undertaken across all facilities with combustion optimisation initiatives conducted to reduce NOx concentrations further below BREF limits.

All of our facilities operated well below the safe emissions levels in our permits and the more stringent BREF limits that will be implemented in December 2023. We remain committed to reducing emissions for all of these monitored items over time.

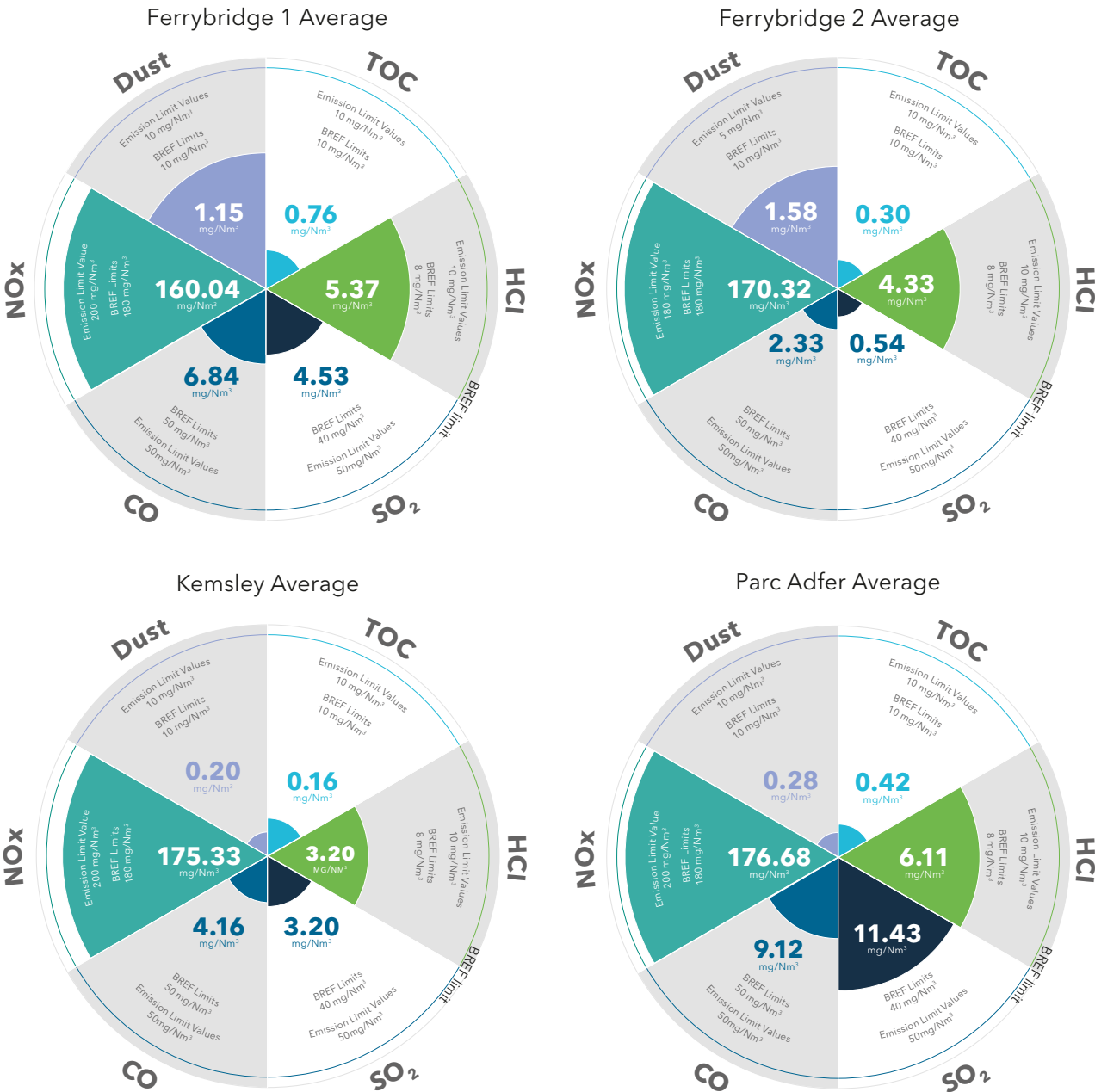


## What is BREF?

Best Available Techniques Reference Documents (BREF) are reports developed to describe industrial processes, emissions and consumption levels of applied techniques.

There, aim is to reduce emissions from different waste treatment processes, while considering energy efficiency, resource efficiency (water consumption, reuse and recovery of materials), prevention of accidents, noise, odour, and the management of residues.

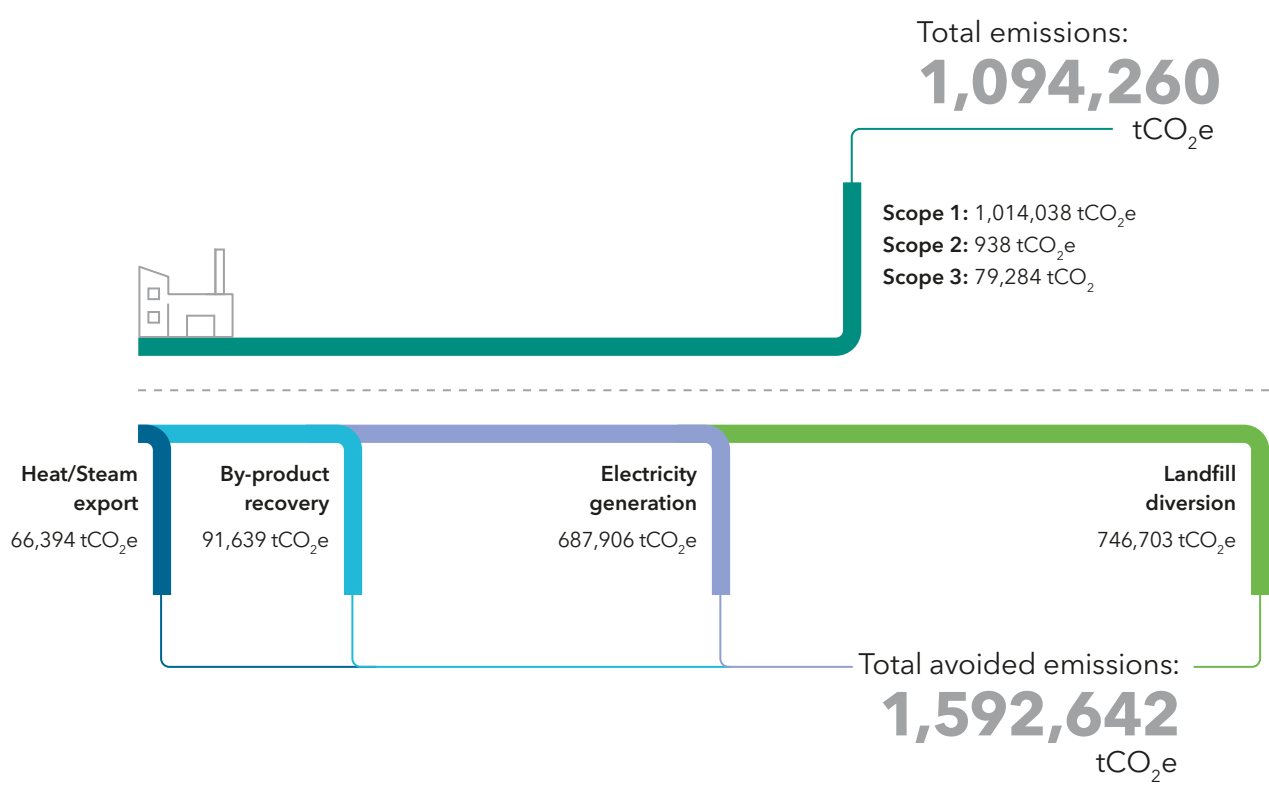
Figure 1. enfinium facilities' average emissions in 2022. Average concentration in mg/Nm<sup>3</sup> (dry gas, 11%O<sub>2</sub>) vs forthcoming BREF limits





# Climate change

Figure 2. Total enfinium emitted and avoided emissions in 2022



We know that our operations contribute direct emissions of CO<sub>2</sub> to the biosphere-atmosphere. But for the future, our vision is that we will be able to harness technology and solutions that help us avoid a high proportion of emissions. In this way we will be able to deliver EfW solutions that are fully integrated in the future energy infrastructure.

Today, we calculate our overall emissions impact by assessing our carbon 'balance sheet'. This sets out the direct and indirect emissions from our activities, compared to the emissions avoided by diverting the residual waste from landfill, by the electricity we produce, from exporting the heat/steam we generate (where possible), and by recovering usable resources from our incinerator bottom ash (IBA) and air pollution control residues (APCr).

In 2022, our facilities delivered a net carbon benefit to the UK by avoiding a total of 498,382 tCO<sub>2</sub>e of emissions entering the biosphere-atmosphere (equivalent to a reduction of 1.4% of the waste sector's emissions).



In 2022, our facilities delivered a net carbon benefit to the UK by avoiding a total of **498,382** tCO<sub>2</sub>e of emissions entering the biosphere-atmosphere



# Measuring emissions

Greenhouse gas emissions are categorised into three groups or ‘Scopes’ by the most widely-used international accounting tool, the Greenhouse Gas (GHG) Protocol.

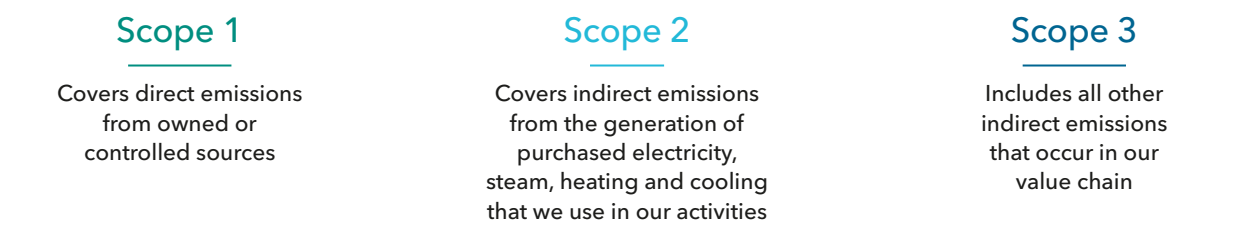
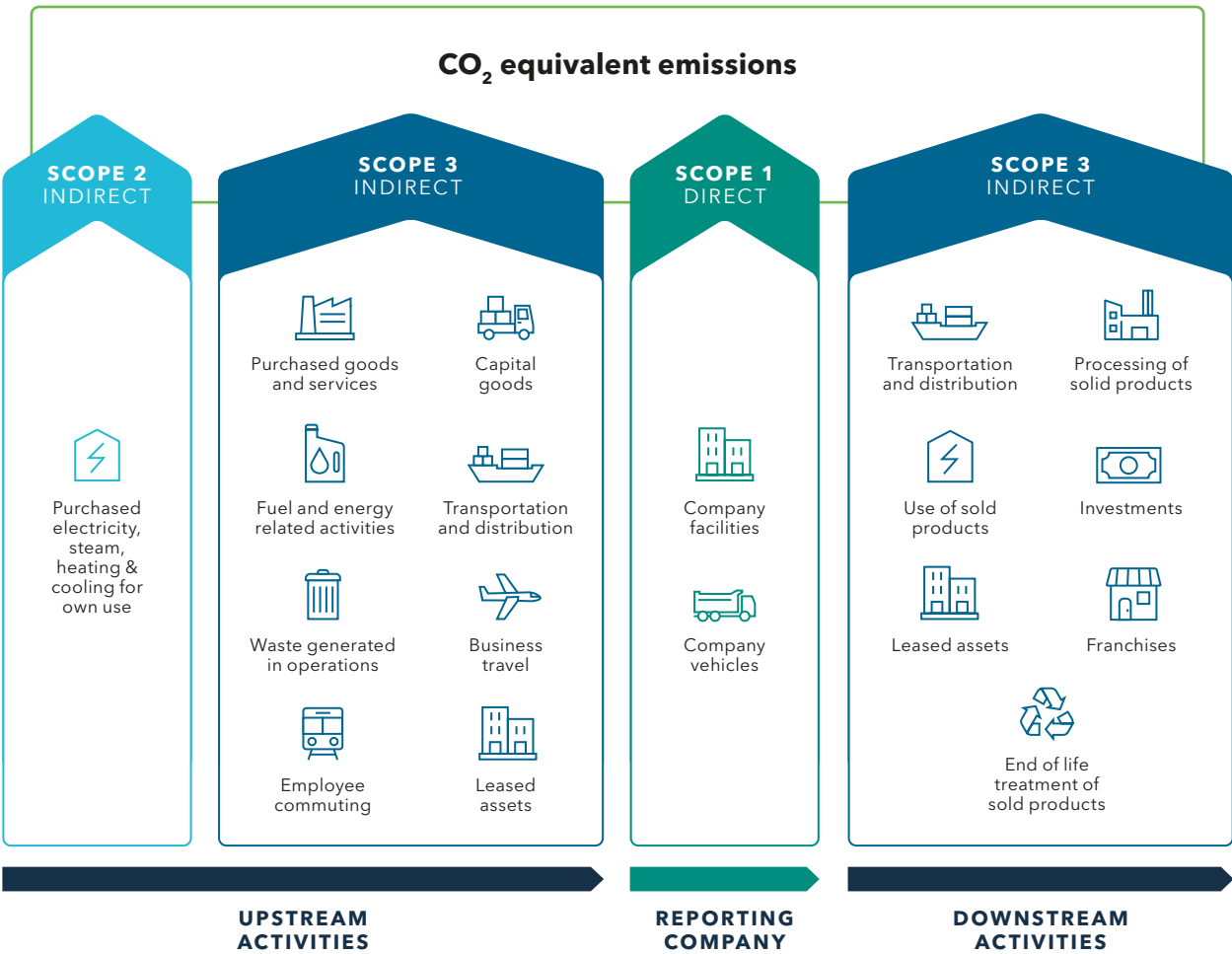


Figure 3. Overview of GHG Protocol scopes and emissions across the value chain





# Managing resources sustainably

## Sustainable resources

Our operations allow us to play a critical role in the emerging circular energy infrastructure in the UK. As well as recovering energy from residual waste, a key workstream for us is to maximise the utility of all the four by-products we create: electricity, heat and steam, incinerator bottom ash (IBA) and Air Pollution Control residues (APCr).

Our primary by-product is electricity. At present, our four operational facilities produce 1.7 million MWh of sustainable baseload energy, powering around 500,000 homes in the UK. This comes from a feedstock of up to 2.3 million tonnes of local and regional residual waste which would otherwise be sent to landfill or exported.

As a critical part of the circular economy, our operational facilities have achieved the Renewable Energy Guarantees of Origin (REGO) certification which certifies that an eligible proportion of each 1 MWh of the energy we produce is classified from a renewable source.

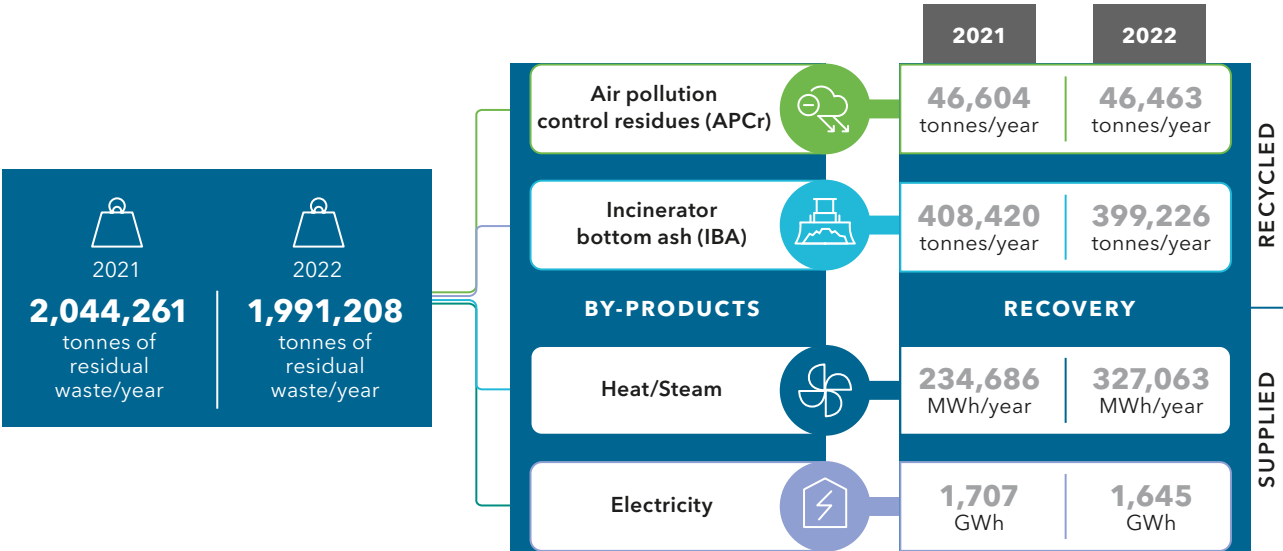
Our Kemsley facility provides heat offtake to the adjacent DS Smith paper mill, and we are looking to further enhance the heat offtake opportunities at other facilities through partnerships with local industrial and district heat networks.

At Parc Adfer, we use the thermal energy generated by our processes to heat the administration building water through a plate heat exchanger.

In partnership with IBA recovery companies, we have recycled 399,226 tonnes per year of our IBA by-product, meaning that we have achieved 100% recycling of IBA. In partnership with APCr recovery companies, we have recycled 46,463 tonnes per year of our APCr by-product, approximately 80%.

Our two Ferrybridge facilities have a recovery contract in place and have achieved 74.8% and 100% APCr recycling rates respectively. Kemsley and Parc Adfer are currently exploring opportunities to create recovery outlets for APCr.

Figure 4. enfinium process resource map for 2022

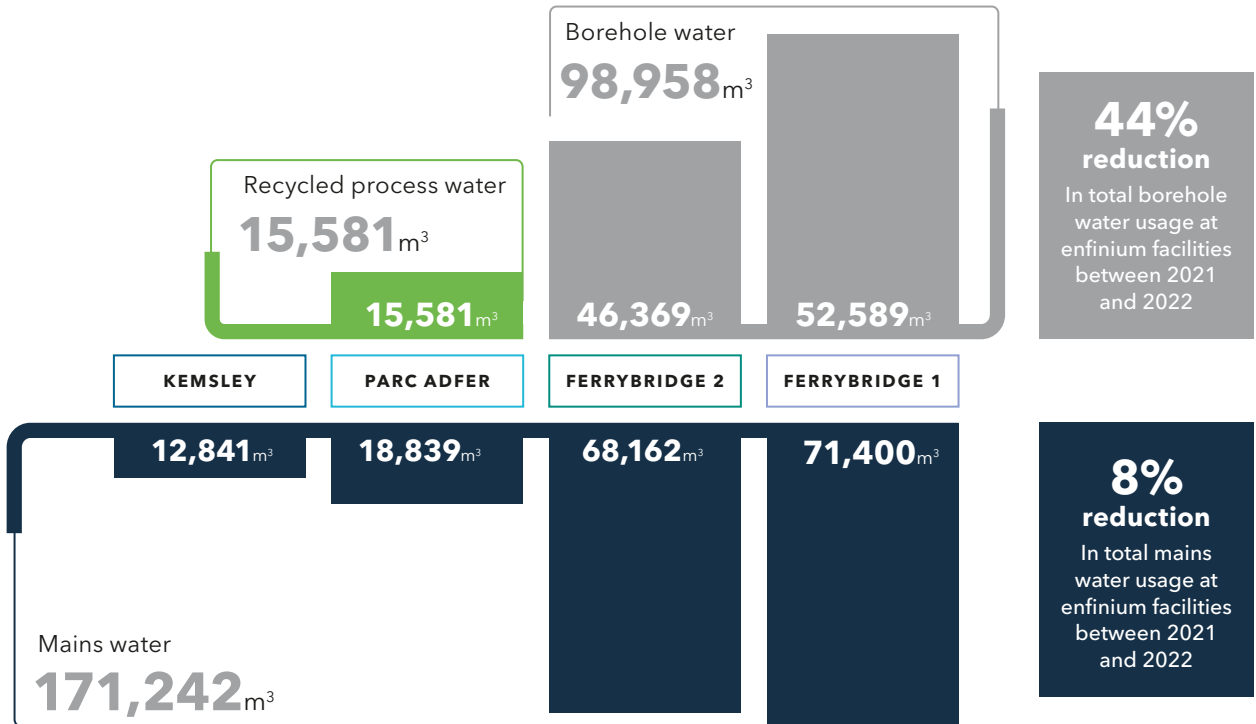


To ensure our operations use water responsibly, we continuously monitor where our water comes from and optimise the sustainability of our water supply policies.

Key features of our water supply policies are:

- We reserve mains/towns water to support the critical processes requiring demineralised water, such as the boilers, cooling media in the steam flash tanks, fire safety systems and as domestic water
- Where possible we harvest rainwater to be used to supplement the critical processes
- Where possible we recycle in an indefinite loop the processed water for non-critical auxiliary processes such as the ash discharge systems and process cooling.

Figure 5. enfinium facilities' water resource usage in 2022\*



\* enfinium are installing flow meters across all facilities to better quantify water usage. Enfinium recirculate and reuse around 95% of the water that we use at our facilities.





# SOCIAL

Our social impact is something that is very important to us. Our four social objectives strongly align with our People and HR strategy – our roadmap to how we will achieve our vision, supported by the strategic pillars of organisational capability, operational excellence, and an inclusive and welcoming culture.

## Employee engagement and wellbeing



Work to develop an actively engaged team, and promote employee wellbeing to create a positive working environment and culture, to attract and retain individuals.

## Health and safety



To only have a positive impact on people's physical and mental health.

## Community



Work within the community where we operate and with the wider community, through outreach, engagement, charitable work and communication, to maintain our social licence to operate.

## Diversity, equality and inclusion



Promote diversity, equality and inclusion to attract and retain talented people and improve business results by enabling everyone to fulfil their potential.

## Employee engagement

Employee engagement, dialogue and involvement is crucial for our business. We work under the mantra that the more supported our team are, the more engaged they are. And if they are engaged, that helps us operate positively, safely and productively.

### Employee engagement survey

Building on the previous year's survey, we based our questions on the Culture Amp methodology which provides a calibrated and benchmarked 'Good Score'.

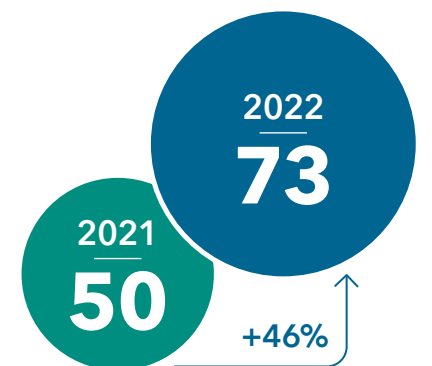
Our teams were asked a series of questions about:

- **Leadership** – including communication, motivating vision and role modelling
- **Enablement** – including learning and development and systems and processes
- **Alignment** – including safety, quality and improvement focus, recognition and expertise
- **Development** – including career aspirations and opportunities
- **Engagement** – including recommending a friend, retention and pride with work

There was an almost 50% increase in employee engagement compared with the previous year, with "engagement", the most improved category.

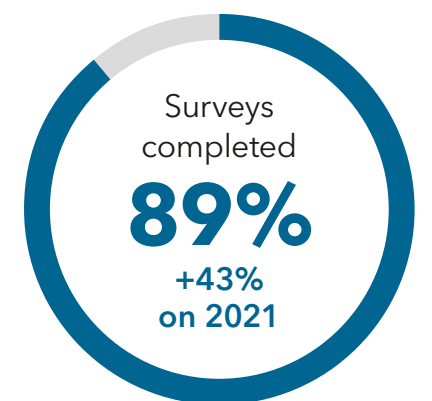
The feedback we received in 2021, led to us running quarterly townhalls and roadshows across our fleet to boost engagement with our teams. They provided the perfect opportunity for facility employees to ask our management team questions, hear more about future development plans and network with colleagues.

The insights from 2022's employee engagement survey will help us shape what we do in the coming years.



Overall score

With all categories seeing an improvement on 2021



## Engagement

The most improved category  
+24% on 2021



# Community

Having the support and trust of the local community is something we really care about. That is why we make a big effort to engage with the communities around our facilities, working hard to get them to understand what we do.

## Keeping people in the loop

Community Liaison Committees (CLC) provide a crucial link between us, our communities, and local stakeholders. The CLCs meet every six months and ensure local communities know what is happening on construction projects in their area.

In 2022, we made the CLCs even more effective by setting up an active site visit engagement plan. It proved the perfect way to help local councillors understand the benefits of energy from waste, homegrown energy generation and waste management at both Skelton Grange and Kelvin.

Andy Street, Mayor of the West Midlands tours the project at Kelvin

## Customer satisfaction survey

For the second year running, we asked for feedback from the waste suppliers we work with, to evaluate how well we are doing in terms of operations, administration and accounting. The majority of our customers are very satisfied and our scores this year were even higher than the year before.



“Our renewed investment in our facilities and regular conversations with suppliers have again provided us with strong satisfaction scores. The recognition is appreciated by the fuel team, and we are actively taking onboard the comments provided to improve further next year.”

Nicholas Holmes  
Senior Market Manager



## Community Funds

In 2022, our Community Funds provided £148,000 for our local communities – an increase in funding from last year of 8%. The fund is accessed through a simple application process and is open to not-for-profit groups, community and voluntary organisations, and local charities close to our facilities.

### Charities supported by our community fund:

- Disasters Emergency Committee (DEC), Ukraine
- The Brain Tumour Charity
- Pogmoor Football Club
- Pontefract Community Kitchen
- Knottingley Food Bank
- Pinderfields Hospital – Children's Ward
- Starr in the Community
- Castleford Brownies
- Featherstone Football Club
- Goole Rugby Club
- Garforth Feastival
- Leeds Rowing Club

“Thank you so much for the great news, we are all very excited to say the least!”

Rebecca Brayson  
Garforth Feastival Team

“Thank you again for your generous funding. The club is very grateful, and your support will make a big difference to our junior rowing academy”

David Cottrell  
Leeds Rowing Club





# Health and safety

We aim to work Safely on Purpose, to ensure we all return home safe, every shift, every day. We empower our team to always do the right thing for the safety of each other and the communities we operate in.

What this means in practice is:

- We focus on every detail
- We put safety – and the safety of others – before speed, before anything else
- We always stop, check and double check
- We speak up if we have any doubts about safety

All our facilities are ISO45001 accredited, an internationally agreed health and safety management system which enables us to continually improve our health and safety performance, fulfil our legal obligations and requirements, and achieve our health and safety objectives. But we go further than that. We work hard to nurture our safety culture – ultimately aiming for zero harm to physical and mental health.

Figure 7. enfinium total safety incidents reported in 2022

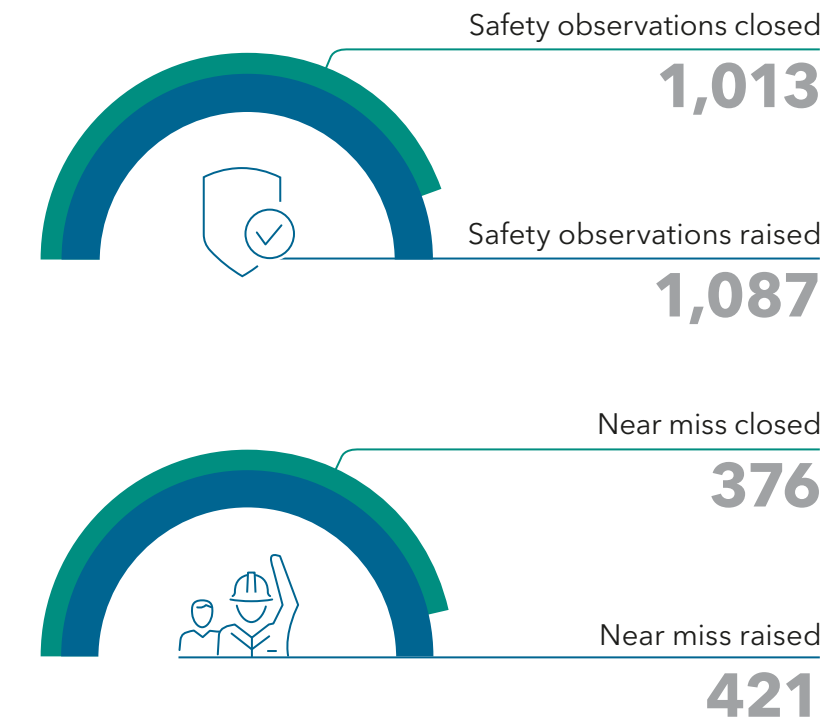


Figure 8. enfinium total RIDDOR rates in 2021

	RIDDOR FR Per 100,000 employees	LTI FR Per 100,000 manhours	TRIR Per 100,000 employees
2022	0	0	0
2021	0.2	0.9	1.1



## Life Saving Rules

In September, we launched our behavioural safety campaign, which included our new Life Saving Rules initiative. The 10 rules cover the highest risk activities undertaken by our teams and have been designed to provide further guidance to prevent the most common causes of serious incidents within the industry.

## Keeping people safe

To promote the importance of safety to our employees, contractors and visitors, we rolled out new electronic signs at each of our facilities. These signs display the number of days lost to injury on the site – hopefully a handy reminder to keep safety front-of-mind at all times.

## Diversity, equality and inclusion

We aim to promote diversity, equality and inclusion to attract and retain talented people, and improve business results by allowing everyone to reach their full potential.

## HSE awards

Our HSE awards recognise and reward individuals who have gone above and beyond in their role and showed passion for improving the safety, health, environment, and quality within their workplace.

HSE award nominations are given to team members who demonstrate positive safety performance or put forward an innovative idea. Each quarter we select a winner and a runner-up. Each receive a certificate, Amazon voucher and public ‘thank you’ in our engage newsletter, in recognition of their contribution to our safety.

## HSE Winners

**Andrew Thompson and Andrew Clynch**

An oil leak in the pipework supplying the steam admittance control valves led to a turbine tripping. A small fire broke out within the lagging of the turbine casing. Shift team leader Andrew Thompson and supported by Andrew Clynch extinguished the fire immediately.

**Sean Collier**

Sean recorded the highest number of good quality safety observations and behavioural surveys. These initiatives allow safety practices to be discussed peer to peer, creating an environment where we remain open to conversations where best practice is listened to and acted upon.



## RoSPA Safety Award

We won a “Highly Commended Award in the Waste Management and Recycling Industry Sector” category, demonstrating our dedication to ensuring employees get home safely at the end of each working day.

The RoSPA Health and Safety Awards are the largest occupational health and safety awards programme in the UK. Entries are received from organisations across the globe, making it one of the most sought-after achievement awards for the health and safety industry.

Now into its 67th year, the awards have almost 2,000 entries every year, covering nearly 50 countries and a reach of over 7 million employees. The programme recognises organisations commitment to continuous improvement in the prevention of accidents and ill health at work, looking at entrants overarching health and safety management systems, including practices such as leadership and workforce involvement.

Royal Society for the Prevention of Accidents (RoSPA) itself is a not-for-profit organisation that has worked for more than 100 years to help people recognise and reduce their risk of accidents, at home, on the road, at work and at leisure. Its goal is to enable everyone to live their lives to the full, safely.

Julia Small, RoSPA's Achievements Director, said “We are thrilled enfinium has won a RoSPA Award and would like to congratulate them on showing an unwavering commitment to keeping their employees, clients and customers safe from accidental harm and injury.”

“We are thrilled enfinium has won a RoSPA Award and would like to congratulate them on showing an unwavering commitment to keeping their employees, clients and customers safe from accidental harm and injury”

**Julia Small,**  
RoSPA's Achievements Director





# International Women's Day



## International Women's Day

International Women's Day is a globally recognised day where women's achievements and successes are celebrated around the world. This international event also acts to raise awareness for women's rights and the social, economic and gender bias against women.

At enfinium, we are proud of our community and the women within our organisation and want to take some time to celebrate all the successful females across our organisation, who continue to make a positive impact today, tomorrow and for our future.

We launched a new set of family support and maternity policies that exceed the industry norm by granting female employees up to 9 months of fully paid maternity leave across the organisation. The new policies form part of enfinium's diversity, equality and inclusion (D,E&I) strategy, which also includes enhanced provision for paternity and shared parental leave.

The new maternity policy, sees members of staff who have been at the company for longer than 3 years, receive 39 weeks full pay. Those with at least 12 months service will be entitled to 26 weeks full pay. The change sees enfinium take a leading position, in terms of maternity support for staff and highlights the company's progressive, female-friendly approach to diversity.



# Providing a platform for women to raise their voices

We asked Jane Atkinson, CBE, Chief Operating Officer and Michaela Jukes, QHS Manager, their thoughts on gender balance and equality.

## What does the 2022 International Women's Day mean to you?

**Jane:** International Women's Day is a really good opportunity for us to show off the amazing women we have got in our own organisation, but to also show young females the range of careers in the STEM industries that are now achievable for them.

**Michaela:** International Women's Day means making sure we have an equal working environment for women.

## What barriers have you faced, as a woman, in becoming successful in your field?

**Jane:** When I first started out in the industry there were virtually no other female employees, so it was really the fundamentals that were lacking across the board. For instance, we didn't have female PPE or even designated female changing rooms! Luckily, things have changed a great deal since then but an issue which is still prevalent today is that because females are still a minority in engineering, we are often held to a greater degree of scrutiny than most male colleagues. Hopefully this will change in the future as more women come into our industry and sector.

**Michaela:** I have been working in a male dominated environment for more than 10 years. Initially it was a challenge, but by being passionate and showing co-workers respect and understanding, I have built good working relationships - which is key to success within any role for a business.

## There are more woman leaders now than before. Does this help?

**Jane:** Absolutely but it's important to make sure that once women are in these senior roles, that they also have the right support mechanisms in place to be successful. We've got some amazing women within the industry now and we are in a position where we can help, support and learn from each other.

**Michaela:** Having more women leaders helps and it's lovely to see them in senior roles.



Jane Atkinson, CBE  
Chief Operating Officer



Michaela Jukes  
QHS Manager, Ferrybridge





## Case study: Developing the next generation

Our apprenticeship programme in conjunction with CATCH



The UK's post-industrial landscape, a tight labour market and declining numbers of students choosing to study STEM subjects (Science, Technology, Engineering and Maths) has left a real skills gap for mechanical, electrical and instrumentation engineers.

That's why in 2022, we decided to tackle this problem and train up the next generation of energy from waste professionals, through its first Mechatronics Operations Engineering Technician (MOET) apprenticeship programme. A move that would also strengthen local community employment near enfinium's existing facilities.

To spread the message far and wide, we partnered with the Engineering Trust and the UK Government's apprenticeship scheme and were delighted to receive 250 applications from right across the country.

The enfinium apprenticeship programme spans three years and is split into two parts. In the first, apprentices receive one year of

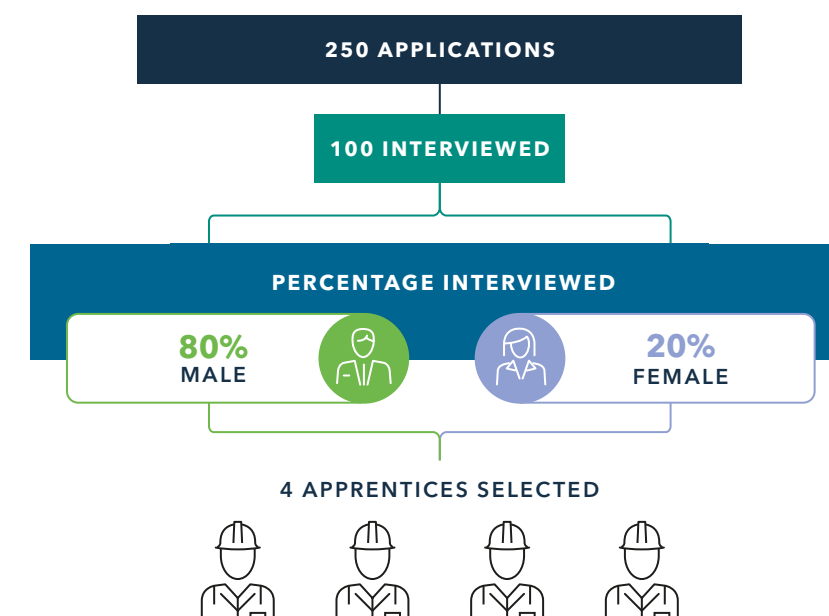
practical workshop and classroom study at CATCH, the training provider we have partnered with. In the second part, apprentices get to apply all they have learnt at CATCH, with two years of real-life, on-the-job training at enfinium EfW facilities. All the time, working alongside mechanical, electrical and instrumentation mentors to gain experience and develop team-building skills.

enfinium apprentices that complete the three-year programme and pass their technical examinations, achieve a Level 3 advanced diploma in Engineering Maintenance as well as a Level 3 NVQ in Electrical, Instrumentation, Mechanical or Multi-Skilled on-site qualifications.



CATCH was created in 1999 to support the development of the Yorkshire and Humber region.

Its £12 million state-of-the-art training facility is designed to immerse students in mechanical, electrical and instrumentation engineering, before being released back to private sector employers for career development.





## Behavioural safety surveys

We introduced behavioural safety surveys, as part of a wider behavioural safety campaign in 2022. Many accidents and near misses occur within the business can be linked to the behaviours of the individuals involved. The behavioural safety campaign focused on our people and their attitudes towards their own behaviour, their colleague's behaviour, and good practice.

Each employee must complete a minimum of one behavioural safety survey within EcoOnline, a reporting tool, each month. The behavioural safety surveys are integrated into every employees personal objectives to ensure compliance.

A chosen task, activity or process will be observed with consideration for the use of PPE, tools, equipment, machinery and an awareness of body positioning, the surroundings and traffic movements.

In addition to the yes and no responses within the survey, there is space for free text to include additional comments on positive and negative safety practices and behaviours observed.



"Behavioural safety compels everyone to think about their actions and the resulting consequences..."

Fiona Gormley  
HSE Coordinator







# GOVERNANCE

Our mission is to power green communities and the circular economy. To be successful, we know that our business has to operate to the highest ethical and governance standards.

The governance of our operations is therefore crucial to us achieving our mission, and that's why we have identified four key objectives to help us.

## Business ethics



As a trusted partner to our customers, communities, suppliers, and regulators, we adopt and maintain the highest standards of business ethics.

## Corporate governance



We ensure compliance with best practice in corporate governance, reporting, independence and authorities and approvals.

## Risk management



The effective identification, assessment and management of risks and opportunities is an integral part of our management structure and culture.

## Tax transparency



As a responsible, long-term operator we pay our taxes fairly and on-time and we are transparent in the way we structure and operate our business.

## Business ethics

We strive to always uphold high ethical standards in all aspects of our business. The framework we have created provides a strong basis for good governance within our operations and we require all employees, directors and those working on our behalf to comply with all applicable laws.

We encourage employees and contractors to ask questions and voice concerns, and we insist on the reporting of any alleged violations of company policies. Employees can submit concerns anonymously through a 24-hour hotline or a mailing address.

We respect confidentiality as far as possible, subject to legal requirements, and have protections in place to prevent retaliation against any worker for submitting concerns. A steering committee reviews the reports of the suspected violations.

### Whistleblowing Hotline

We introduced a new whistleblower hotline, Safecall to enable all enfinium employees to report issues relating to their workplace and working environment in a safe and secure way via phone or web.

Safecall is an independent, impartial service that allows employees to call confidentially on **0800 915 1571** to raise issues ranging from security and safety concerns to bullying and unethical conduct. A report can also be filed online.

All issues raised with Safecall are anonymously collected by a former police officer who will then file a report. Reports are then collated and reviewed at Board level. All general feedback and HR related issues still go through line managers.

Posters promoting the service are clearly visible across all facilities.

Our supply chain is an important area for high ethical standards. Supply chain evaluation was significantly enhanced in 2022 through a new, more thorough supplier form and purchase order system that ensures all new suppliers are vetted by procurement, legal and HSE. We review and evaluate policies and procedures across our areas of importance, including:

- Environmental law
- Health and safety law
- Combating modern slavery
- Corporate compliance
- Environmental policies
- Health and safety policies
- Insurance policies

We have identified our supply chain as a key area for sustainability reporting in future years. Many of our suppliers are small and medium-sized suppliers that are unable to provide us with enhanced sustainability information. In 2023, we plan to work with our suppliers to gather better quality data that can be integrated into our Scope 1, 2 and 3 reporting processes.

**Speak Up**

If you have a serious concern over wrongdoing at work:

- Report it to your line manager or HR, or
- Speak to a senior manager, or
- contact Safecall

**0800 915 1571**

or report on line at: [www.safecall.co.uk/report](http://www.safecall.co.uk/report)

**safecall**  
A totally independent organisation working with enfinium

All calls are treated confidentially by Safecall and you may remain anonymous if you wish.



# Industry associations

We are members of a number of different industry associations and gain significant value from sharing best practice. The associations include:

**Environmental Services Association (ESA)**

The trade body that represents the UK's resource and waste management industry and is committed to delivering a long-term zero-waste, zero-carbon future.

**Carbon Capture and Storage Association (CCSA)**

Established to ensure that carbon capture, utilisation and storage (CCUS) is recognised as an essential solution to deliver Net Zero emissions across the economy.

**The Association for Renewable Energy and Clean Technology (REA)**

A not-for-profit trade association that works to secure the best legislative and regulatory framework for expanding renewable energy deployment and production.

**Engineering Equipment and Materials Users Association (EEMUA)**

An internationally recognised source of expertise and information for the engineering industry.

**All-Party Parliamentary Sustainable Resource Group (APSRG)**

A leading forum informing the debate between parliamentarians, business leaders and the sustainable resource community.

**UK District Energy Association**

The UK District Energy Association is a trade association that champions the decarbonisation of heat through a variety of district heating and industrial steam offtake projects.

# Corporate Governance

Our Group Board has overall responsibility for defining our strategy and overseeing the performance of our business. It meets at least quarterly and is supported through the work of four Board committees:

**1. Health, safety and environment**

Responsible for defining and overseeing policies and procedures relating to health, safety and environmental matters. As well as monitoring compliance and continuous improvement of health, safety and environmental performance and setting the ESG strategy for our group.

**2. Finance, risk management and audit**

Responsible for defining accounting policies and procedures, this committee receives reports from our group's auditors, establishes and reviews risk management activities and monitors the use of proceeds under the operating group's Green Financing Framework.

**3. Development**

Responsible for reviewing our group's construction and development projects and ensuring that these projects are aligned and delivered in accordance with our organisation's strategic growth plans.

**4. Remuneration**

Reviewing compensation and benefits programmes across our business to help us fulfil our vision to be the employer of choice in our sector. The committee oversees the implementation and management of short-term and long-term bonus and incentive plans that align with the overarching investment goals for the business.



Figure 9. enfinium governance structure

enfinium Group Board				
Finance, Risk Management & Audit Committee	Development Committee	Health, Safety & Environment Committee	Remuneration Committee	
Financial accounting, auditing and reporting, corporate finance and risk management, Green Financing	Construction and development projects oversight and review	Health & Safety and Environmental performance and compliance, ESG Strategy	Compensation, incentives, and benefits	
Executive Committee				
Executive Committee	Approvals Committee	PMO Governance Committee	Risk Management Committee	
Safety, environmental, operational, financial and human resources performance. Business development review and strategic objectives monitoring	Approval of items as required under the Authorities Schedule	Review all business development, strategic, transformation or cross functional projects	Oversee the operation of the Risk Policy & Framework, risk registers, action plans and risk mitigation measures	
Monthly	Fortnightly	Monthly	Quarterly	
Business Level Committees and Working Groups				
Information & Systems Security Committee	Operational Reviews	Construction Steering Group	Project Team Meetings	ESG Working Group
Information and systems security, policies, monitoring and accreditation	In-depth reviews of all aspects of performance for each operating plant	Review all construction projects, including progress, budget, risks and resourcing	Project Team meeting for each BD and Corporate project progress against key milestones, workstream updates, resources and planning	Development and implementation of ESG Strategy and ESG plan and objectives
Quarterly	Monthly	Weekly	Weekly	Monthly

Key appointments

In October, we were delighted to appoint Emmanuel Vivant as a Non-Executive Director. Prior to joining Igneo Emmanuel was CEO of SAUR International as well as holding senior roles at RATP Dev Transdev Asia, Hong Kong Tramways and Veolia Transport.

We were also pleased to welcome both Dr Jane Atkinson CBE and Jenny Harrison to the Executive Committee. Jane joined enfinium in November 2022 as Chief Operations Officer and in March 2023, Jenny was appointed Chief Financial Officer.

enfinium Group  
Limited Board



Sir Peter Gershon CBE  
Chairman

Sir Peter Gershon has been Chairman since July 2021. Previously he was the Chairman of National Grid plc, Tate & Lyle plc, the Dreadnought Alliance and the Office of Government Commerce. Sir Peter was appointed a CBE for his services to industry in 2000 and knighted for his work on public procurement in 2004.



Lynn Fordham  
Non-Executive Director

Lynn Fordham has been a Non-Executive Director since March 2022 and is Chair of the Finance, Risk Management and Audit Committee at enfinium. Previously she was the CEO of SVG Capital and has also held senior executive roles at Mobil, BAA plc, Boots and Barratt Homes. Ms Fordham is a qualified Chartered Accountant.



Philip Piddington  
Non-Executive Director

Philip Piddington has been a Non-Executive Director since January 2022 and he chairs the Health, Safety & Environment and Development Committees at enfinium. Previously he was the CEO of Viridor and Chairman of the Environmental Services Association. Mr Piddington has held senior management positions within the RWE Group and BP plc.



Hamish Lea-Wilson  
Non-Executive Director

Hamish Lea-Wilson has been an Igneo Non-Executive Director since February 2021. He is Partner, Head of Transactions, Europe and a member of the European Diversified Fund I, II and III Investment Committees at Igneo IP. In addition to his role at enfinium, Mr Lea-Wilson sits on the Board of Finerge.



Emmanuel Vivant  
Non-Executive Director

Emmanuel Vivant has been an Igneo Non-Executive Director since October 2022. Previously, he was CEO of SAUR International as well as senior roles at RATP Dev Transdev Asia, Hong Kong Tramways and Veolia Transport. Mr Vivant is also a member of the Board of Directors of Evos.



Mike Maudsley  
Chief Executive Officer

Mike Maudsley has been Chief Executive Officer since January 2022. Previously he was Chief Operations Executive Director responsible for leading all operating assets at Drax plc. Prior to Drax, he spent six years in the Middle East with Engie.



Jenny Harrison  
Chief Financial Officer

Jenny Harrison has been Chief Financial Officer since March 2023. Previously, she was Finance Director at UK Power Networks as well as holding senior roles at BT Group, EY, Andersen and Deloitte. Jenny is a Chartered Accountant.



Wayne Robertson  
General Counsel and  
Company Secretary

Wayne Robertson has been General Counsel and Executive Committee lead for ESG, Net Zero, Policy & Regulation and Communications since January 2020. Previously he has held senior legal, board and executive roles at BT, Accenture, Amey and Wheelabrator UK.



# Case study: Learning Management system



One of the areas identified for improvement within the 2021 employee engagement survey was for there to be more structured employee training and development.

In response to this feedback, enfinium introduced a new learning management system named ELVIS (enfinium learning via interactive systems). ELVIS is designed to manage, distribute, and track employee training based on a 360-learning training platform.

The aim with ELVIS is to improve learning outcomes, compliance and increase employee productivity. Every employee within the business is given a training pathway and pre-allocated courses to guide them through their development.

The learning management system includes enhanced features which allow users to feedback in real-time as they complete the courses, making learning more interactive.

ELVIS has also greatly enhanced the delivery of mandatory compliance training across the organisation for safety, health, environmental, legal and policy changes.

The ELVIS training platform launched with 29 courses across a multitude of training, toolbox talks and manager development pathways. Courses, among others include:

- New Joiners' Induction**
- Safety, Health, Environmental, Quality**
- HSE - COSHH Awareness
  - HSE - Health and Safety Evacuation for enfinium
  - HSE - Manual Handling
  - HSE - DSE Training and Assessment
  - HSE - Leadership Site Tours
  - Mental Health
  - Suicide Awareness
- Manager Development**
- Leadership in a Crisis
  - Creating a Positive Workplace
  - How to Encourage Honest Feedback
- Compliance**
- Anti-Bribery
  - Anti-Money Laundering
  - Data Protection
  - Modern Slavery

"ELVIS is a huge step forward for the organisation, with eLearning content that offers blended training and engaging content as well as the opportunity for employees to feedback in real-time. We have ambitious plans to add further enfinium focused content that enhances employee value in the years to come."

Simon Williams  
Learning & Development Manager



# Data and reporting

## ENVIRONMENTAL

### Total GHG emissions

Gross emissions: **2,196,849**  
(including biogenic and non-biogenic emissions)

	2021 tCO <sub>2</sub> e	2022 tCO <sub>2</sub> e
Scope 1	1,035,011	1,014,038
Scope 2	701	938
Scope 3*	2,127	79,284
Total emissions	1,037,839	1,094,260

enfinium also calculates the overall emissions benefit generated by its activities including the emissions savings achieved through:

- Generation of partially renewable electricity for export to the National Grid
- Recovery and recycling of materials from incinerator bottom ash (IBA) and Air Pollution Control residues (APCr), saving emissions that would otherwise be generated by producing virgin materials
- Exporting heat and steam to power industrial facilities and other buildings
- Diverting waste from landfill, which results in emissions savings because emissions from landfill are more harmful than those from energy from waste facilities.

### R1 efficiency calculations

Facility	2021	2022
Ferrybridge 1	0.80	0.79
Ferrybridge 2	0.85	0.82
Kemsley	0.82	0.91
Parc Adfer	0.67	0.67

For the year 1 January 2021 to 31 December 2022, the emissions benefits generated from these activities were as follows:

### Total avoided emissions

		2021	2022
Electricity generation	Calculation of CO <sub>2</sub> benefit based on displaced marginal CCGT generation (0.38 kg CO <sub>2</sub> e/kWh)	546,354 tCO <sub>2</sub> e	687,906 tCO <sub>2</sub> e
By-product recovery	Calculation of CO <sub>2</sub> benefit based on revised emissions factors provided by Arup Consulting***	256,567 tCO <sub>2</sub> e	91,639 tCO <sub>2</sub> e
Heat/Steam export	UK government GHG Conversion Factors for Company Reporting, assuming displacement of gas-fired boilers***	40,068 tCO <sub>2</sub> e	66,394 tCO <sub>2</sub> e
Landfill diversion	External consultant calculated emissions factor based on comparison between landfill and waste-to-energy emissions (0.375 t CO <sub>2</sub> e/t waste)	766,598 tCO <sub>2</sub> e	746,703 tCO <sub>2</sub> e

The total Avoided Emissions from the above activities for the year was: **1,592,642 tCO<sub>2</sub>e**

The Net Carbon Benefit of enfinium’s operations after deducting scope 1, 2 and 3 emissions is: **498,382 tCO<sub>2</sub>e**

### Emissions performance compared to ELV and BREF limits

Site	Dust	TOC	HCl	SO <sub>2</sub>	CO	NOx
Units	mg/m <sup>2</sup>	mg/m <sup>2</sup>	mg/m <sup>2</sup>	mg/m <sup>2</sup>	mg/m <sup>2</sup>	mg/m <sup>2</sup>
Emission Limit Values	10.00	10.00	10.00	50.00	50.00	200.00
BREF Limits	10.00	10.00	8.00	40.00	50.00	180.00
Ferrybridge 1 Average	1.15	0.76	5.37	4.53	6.84	160.04
Ferrybridge 2 Average	1.58	0.30	4.33	0.54	2.33	170.32
Kemsley Average	0.20	0.16	3.40	3.20	4.16	175.33
Parc Adfer Average	0.28	0.42	6.11	11.43	9.12	176.68

### Water resource usage

Facilities	Mains/ town water	Recycled process water	Borehole water	TOTAL
Units	m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>
Ferrybridge 1**	71,400	-	52,589	71,400
Ferrybridge 2**	68,162	-	46,369	68,162
Kemsley	12,841	-	-	12,841
Parc Adfer	18,839	15,581	-	18,839
TOTAL	171,242	15,581	98,958	171,242

\* enfinium have enhanced reporting on Scope 3 emissions in 2022 by including construction and major bulk materials into the dataset. enfinium plan to expand Scope 3 reporting over time to improve visibility across business activities and wider supply chain.

\*\* Ferrybridge freshwater usage reduced owing to a change in operating procedures.

\*\*\*We have updated our methodology for the categories indicated for 2022, in line with industry best practice.

## SAFETY

### Safety

	2021	2022
Total number of hours worked (annual figure) (employees)	436,398	529,355
Total number of hours worked (annual figure) (on-site contractors)	236,579	561,955
Number of recordable injuries (employees)	5	0
Number of recordable injuries (on-site contractors)	6	6
Number of lost time injuries (employees)	4	0
Number of lost time injuries (on-site contractors)	5	2
Number of fatalities (employees)	0	0
Number of fatalities (on-site contractors)	0	0

### Safety observations

	2021	2022
Safety observations raised	1,559	1,087
Safety observations closed	1,463	1,013
Near miss raised	296	421
Near miss closed	246	376

### RIDDOR and LTIFR

Metric	2021	2022
Fatalities	0	0
RIDDOR FR	0.23	0
RIDDOR IR	40	0
LTIFR (employees)	0.9	0
LTIFR (employees + contractors)	1.3	0.4

## EMPLOYEES

### Employees

	2021	2022
Number of staff (total)	238	256
Number of staff (female)	33	37
Number of staff in management (total)	7	8
Number of staff in management (female)	1	1
Number of board directors (total)	6	7
Number of board directors (female)	1	2
Number of onsite contractors (total)	9	7
Number of onsite contractors (female)	2	2
Number of new hires (total)	51	68
Number of new hires (female)	9	20
Number of new hires to Board or management (total)	2	1
Number of new hires to Board or management (female)	0	1
Unadjusted gender pay gap	-21%	4%

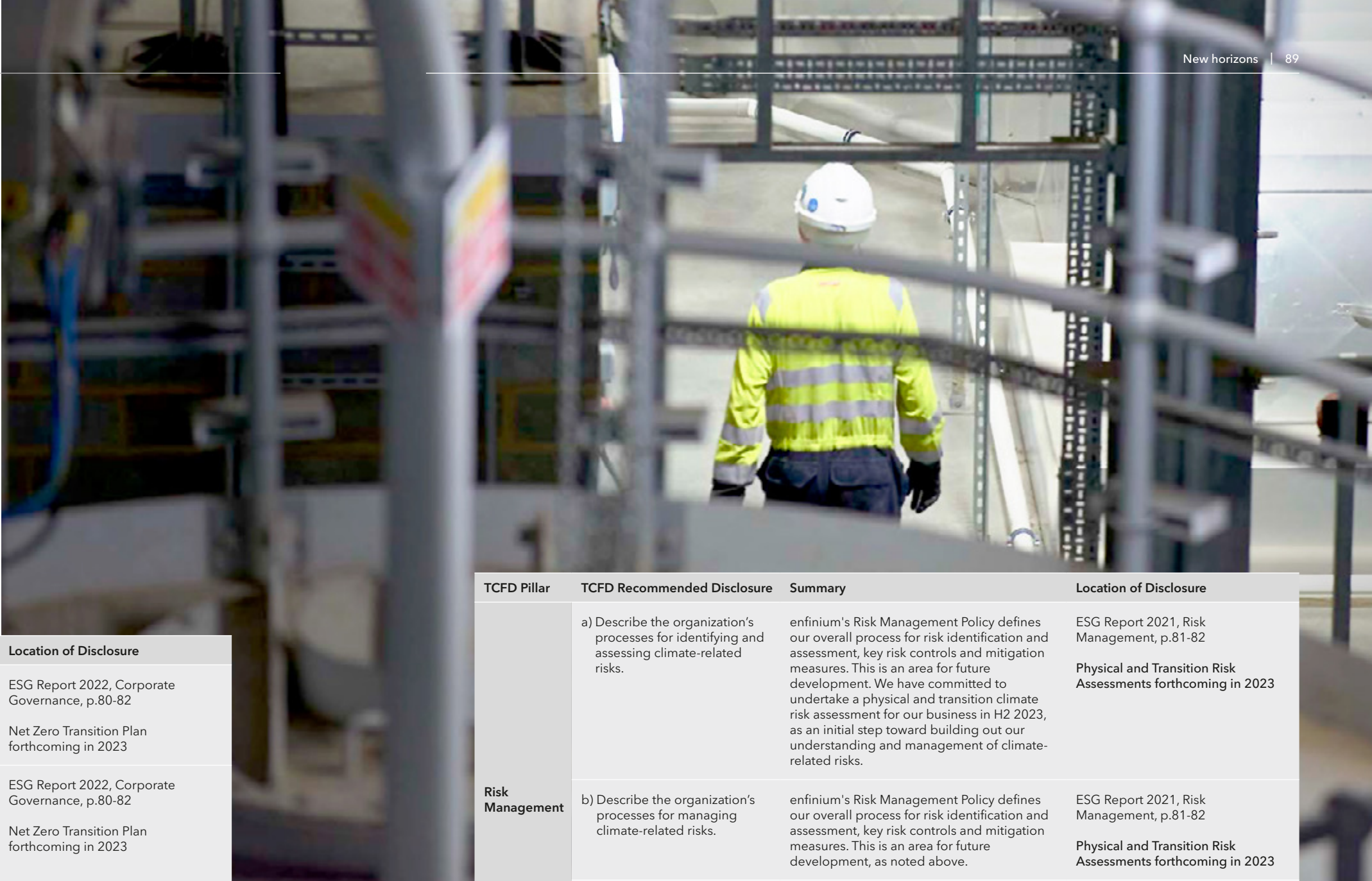


# TCFD Index

The Task Force on Climate-related Financial Disclosures (TCFD) provides a framework for consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers and other stakeholders. The table below links to where the relevant information can be found on our website, annual report, ESG report, and upcoming Net Zero Transition Plan.

This represents our first disclosure in line with the TCFD Recommendations. We are disclosing voluntarily and we will report on our progress annually, as we continue to develop our approach to the management of climate-related issues.

TCFD Pillar	TCFD Recommended Disclosure	Summary	Location of Disclosure
Governance	a) Describe the board's oversight of climate-related risks and opportunities.	The enfinium Group Board has overall responsibility for defining our strategy and overseeing the performance of our business. The Board approves our ESG Strategy and Net Zero Transition Plan.	ESG Report 2022, Corporate Governance, p.80-82  Net Zero Transition Plan forthcoming in 2023
	b) Describe management's role in assessing and managing climate-related risks and opportunities.	The Executive Committee is responsible for safety, environmental, operational, financial, and human resources performance, and monitoring strategic objectives. It oversees implementation of our ESG Strategy and Net Zero Transition Plan, ensuring these are considered in strategic decision-making.	ESG Report 2022, Corporate Governance, p.80-82  Net Zero Transition Plan forthcoming in 2023
Strategy	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	HSSE principal risks and uncertainties are disclosed in our Annual Report. Operational & construction, corporate & financial principal risks are disclosed in our 2021 ESG Report.	Annual Report 2021, Principal Risks & Uncertainties, p. 4-5  ESG Report 2021, Risk Management, p.81-82
		Our ESG Report outlines opportunities we are pursuing across our Horizon Strategy. Our Net Zero Transition Plan outlines in further detail the strategic decarbonisation opportunities that we are pursuing.	ESG Report 2022, Our Horizon Strategy, p.18-19  Net Zero Transition Plan forthcoming in 2023
	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	Our ESG Strategy outlines our environmental, social and governance strategic priorities and ambitions. Our Net Zero Transition Plan outlines our plans to decarbonise our business, in line with the aims of the Paris Agreement.	ESG Report 2022, ESG Strategy and Performance Measures, p.10-11  enfinium's Net Zero Transition Plan forthcoming in 2023
		Our Net Zero Transition Plan utilises scenarios to account for risks and uncertainties in our path toward Net Zero. However, we have not yet undertaken a formal scenario analysis to assess the resilience of our business operations and strategy. This is an area for future development.	ESG Report 2021, Risk Management  Physical and Transition Risk Assessment forthcoming in 2023
	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.		



TCFD Pillar	TCFD Recommended Disclosure	Summary	Location of Disclosure
Risk Management	a) Describe the organization's processes for identifying and assessing climate-related risks.	enfinium's Risk Management Policy defines our overall process for risk identification and assessment, key risk controls and mitigation measures. This is an area for future development. We have committed to undertake a physical and transition climate risk assessment for our business in H2 2023, as an initial step toward building out our understanding and management of climate-related risks.	ESG Report 2021, Risk Management, p.81-82  Physical and Transition Risk Assessments forthcoming in 2023
	b) Describe the organization's processes for managing climate-related risks.	enfinium's Risk Management Policy defines our overall process for risk identification and assessment, key risk controls and mitigation measures. This is an area for future development, as noted above.	ESG Report 2021, Risk Management, p.81-82  Physical and Transition Risk Assessments forthcoming in 2023
	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	enfinium's Risk Management Policy defines our overall process for risk identification and assessment, key risk controls and mitigation measures. This is an area for future development, as noted above.	ESG Report 2021, Risk Management, p.81-82  Physical and Transition Risk Assessments forthcoming in 2023
Metrics and Targets	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Our ESG Strategy outlines our environmental, social and governance strategic priorities and ambitions. The ESG Report 2022 lists the performance measures for each of these areas, which we use to assess, monitor, and improve our ESG performance. We disclose Scope 1, 2 and 3 greenhouse gas emissions and total avoided emissions annually in our ESG Report.	ESG Report 2022, ESG Strategy and Performance Measures, p.10-11  ESG Report 2022, Key Metrics & Indicators (Environmental), p.84
	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	We disclose Scope 1, 2 and 3 greenhouse gas emissions annually in our ESG Report. We are working to expand our Scope 3 emissions measurement and reporting.	ESG Report 2022, Key Metrics & Indicators (Environmental), p.84
	c) Describe the targets used by the organization to manage climate-related risks and performance against targets.	Our target is our Net Zero Transition Plan, currently encompassing our Scope 1 and 2 emissions profile. Future iterations of our Net Zero Transition Plan will include Scope 3 alongside our identified actions to decarbonise these value chain emissions.	Net Zero Transition Plan forthcoming in 2023  ESG Report 2022, Key Metrics & Indicators (Environmental), p.84



# Glossary

APCr	Air Pollution Control residues
BEIS	Department of Business, Energy and Industrial Strategy
BNG	Biodiversity net gain
BREEAM	Building Research Establishment Environmental Assessment Method
BREF	Best Available Techniques Reference Documents
C&I	Commercial and industrial waste
CCS	Carbon Capture and Storage
CCSA	Carbon Capture and Storage Association
CCUS	Carbon capture, utilisation and storage
CEMS	Continuous Emissions Monitoring Systems
CfD	Contracts for difference
CHP	Combined heat and power
CLCs	Community liaison committees
COD	Commercial operation date
DEFRA	Department for Environment, Food & Rural Affairs
DE&I	Diversity, equality and inclusion
EEMUA	Engineering Equipment and Materials Users Association
EfW	Energy from Waste
EMS	Environmental management systems
EPC	Engineering, procurement & construction
ESA	Environmental Services Association
ESG	Environmental, social and governance
EV	Electric vehicle
FSC	Forest Stewardship Council
GHG	Greenhouse gas
H&S	Health and safety
IBA	Incinerator bottom ash
ICE	Internal combustion engine
Igneo IP	Igneo Infrastructure Partners
IPCC	The Intergovernmental Panel on Climate Change
LTIFR	Lost time injury frequency rate
LCCC	Low Carbon Contracts Company
NWRWTP	North Wales Residual Waste Treatment Project
MSW	Municipal solid waste
UK ETS	UK Emission Trading Scheme
REA	The Association for Renewable Energy and Clean Technology
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013
UN SDG	United Nations Sustainable Development Goals





This document and its contents have been prepared on behalf of enfinium Group Limited. This environmental, social and governance (ESG) report relates to the activities, brands, products and services associated with enfinium Group Limited. Reference to the 'Company' or to 'enfinium' means, as the context may require, enfinium Group Limited and all or some of its subsidiaries or operating companies. enfinium Group Limited assumes no responsibility to any other party in respect of, or arising out of, or in connection with, this document and/or its content or reliance thereon.

This report ('report') covers activities of the enfinium Group Limited from January 1, 2022 to December 31, 2022.