



Our Annual Environmental Report 2022/23

Leading a clean energy future for everyone.

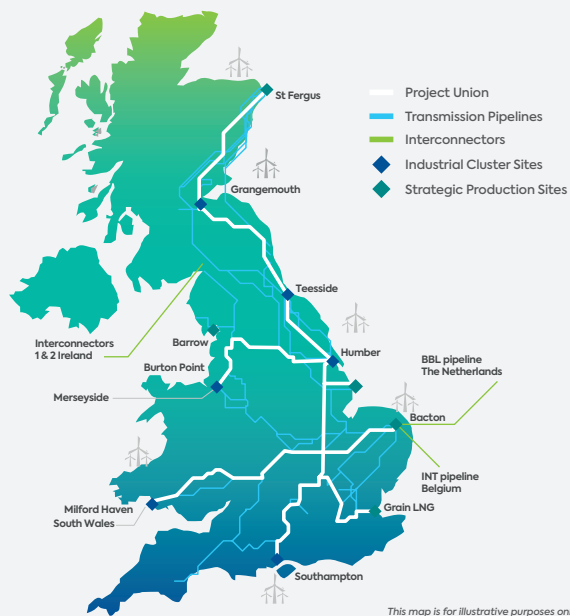


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Introduction

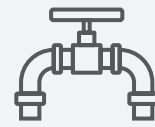
National Gas Transmission owns, manages, and operates the National Transmission System (NTS) in Great Britain (GB), making gas available when and where it's needed.



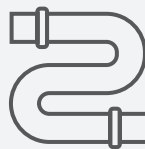
This map is for illustrative purposes only



23
compressor stations



~530
above-ground installations (AGIs)



7,660km
network length



Gas National Control Centre (GNCC)



8
connected distribution networks

Who we are

National Gas owns and operates the regulated gas NTS in GB and owns an independent gas metering business, National Gas Metering. This report applies to National Gas Transmission only. As both the transmission owner and system operator, we own, build, and operate the high-pressure NTS with day-to-day responsibility for balancing supply and demand in real time, and facilitating the connection of assets to the NTS. The National Gas Transmission network comprises of approximately 7,660 kilometres of high-pressure pipeline and 23 compressor stations connecting to eight distribution networks and other third-party independent systems. The NTS provides jobs and supports growth – both directly and through our extensive supply chain.

In March 2022, National Grid plc confirmed plans to sell a majority stake in its UK gas transmission and metering business to a consortium comprised of Macquarie Asset Management, a global asset manager and the world's largest infrastructure manager, and British Columbia Investment Management Corporation, one of Canada's largest institutional investors. The sale was completed in February 2023, forming National Gas as a standalone entity.

Purpose of the report

This Annual Environmental Report (AER) has been prepared to meet the requirement of Special Condition 9.1 (SpC 9.1) of the gas transmission (GT) and gas distribution (GD) licences. The report provides our stakeholders with an overview of progress against our Environmental Action Plan (EAP) and the activities we have undertaken over the reporting period to manage and reduce our environmental impacts.

The reporting period for this AER is 1 April 2022 to 31 March 2023 in line with the RIIO-T2 price control period that applies to the five-year licence beginning on 1 April 2021.

Progress against our EAP targets are included within the Ofgem Regulatory Reporting Process (RRP). National Gas considers our governance process for RRP to provide consistent and robust coverage for the sign off of data assurance activities as stipulated by Ofgem.

Our Environmental Responsibilities

Looking after the environment is crucial to National Gas – both in our long-term vision for the UK energy mix and our day-to-day operations. Gas is, and will be for decades to come, a major contributor to the blend of energy sources powering the UK.

We want to play our part in helping the UK address its big climate challenges. But more than that, we're passionate about reducing the impact of National Gas Transmission's operations on the environment while delivering positive benefits for the communities we serve.

We strive to achieve minimal adverse environmental impacts across all our operations whilst also seeking ways to enhance the local environment. Our overall Safety, Health and Environment (SHE) ambition is to

protect the environment and act sustainably every day. This approach aligns with Ofgem's environmental focus areas for the RIIO-T2 regulatory period:

- Decarbonising the energy networks – with a focus on business carbon footprint and embedded carbon.
- Reducing networks' other environmental impacts, i.e. pollution to local environment; resource use and waste management; biodiversity loss and other adverse effects that are specific to each sector.
- Supporting the transition to an environmentally sustainable low-carbon energy system.

National Gas plays a leading role in Britain's journey to a clean energy future, and this has shaped our EAP. Prior to RIIO-T2, we worked with our stakeholders to identify 30 environmental targets where we believe we can have a positive impact.



Executive message

I am delighted to share with you our second AER for RIIO-T2.

National Gas plays a critical role in delivering the United Kingdom's (UK) ambitious environmental and climate objectives, whilst powering an energy transition where no one is left behind. Our purpose is to lead a clean energy future for everyone.

At any one time we supply up to 50% of the nation's energy which really highlights the importance of maintaining the network we have today and the service it provides, whilst focusing on our future strategic direction and the leading role National Gas will play in the UK's energy transition.

This is our first environmental report as a standalone business, and we remain as committed as ever to a sustainable future.

Two key highlights that I would like to call out are:

- The development of the National Gas Transmission Decarbonisation Strategy. Following separation from National Grid, we have initiated a study to understand the feasibility of reaching net zero emissions by 2040. Our strategy will be Science Based Targets initiative (SBTi) aligned, 1.5 degree compatible and completed by the end of 2023; I look forward to sharing this in next year's Annual Environment Report.
- HyNTS FutureGrid phase 1, our high-pressure hydrogen test facility, has begun testing to demonstrate how a future hydrogen system will operate. The offline hydrogen test facility is representative of a range of NTS assets of varying types, sizes and material grades and will operate in conjunction with standalone hydrogen test modules. To date, the test facility has initially run on 100% natural gas, to collect baseline

data, with subsequent steps due to test 2%, 5%, 20% hydrogen/natural gas mixtures and then 100% hydrogen. Having recently won Project of the Year at the Gas Industry Awards 2023, FutureGrid is considered an integral site for shaping our energy future and providing the key data required for establishing a UK hydrogen backbone. The HyNTS FutureGrid site will be further expanded over the next three years after being awarded £43m of Strategic Innovation Funding to include compression and debinding assets.

I am incredibly proud of all the initiatives we have taken to make our business greener and the continued contribution we are making to the environmental challenges we have ahead of us. Within this report, you will find more detail on our successes and all the environmental work we have undertaken this year, as well as a comprehensive update on our EAP.



Jon Butterworth, Chief Executive Officer, National Gas



Dashboard indicators

The table below summarises key environmental performance indicators relevant to National Gas.

No.	Impact and Key Performance Indicator	Unit
Climate change impact		
2.1	Licensee's long-term greenhouse gas reduction target, aligned with a science-based methodology. Where possible, validated externally such as with the SBTi or equivalent	We are committed to a Net Zero target of 2050 with an ambition of 2040
2.2	Annual change in licensee's business carbon footprint, excluding losses/shrinkage in comparison to last year	+36.7%*
2.3	Annual change in compressor emissions through GT	+48%*
Resource use and waste		
3.1	Annual total operational waste	584 tonnes
	Annual total office waste	46.59 tonnes
	Annual total construction waste	20,025 tonnes**
3.2	Fate of operational waste: diverted, recycled, landfill	58.4% diverted / 38.2% recycled / 3.4% landfill
	Fate of office waste: diverted, recycled, landfill	17.4% diverted / 80.4% recycled / 2.2% landfill
	Fate of construction waste: diverted, recycled, landfill	1.6% diverted / 87.9% recycled / 10.5% landfill
Sustainable procurement		
4.1	Proportion of suppliers meeting the licensee's environmental supplier code or equivalent	100% are signed up to the code of conduct. Data in development for the % meeting the code of conduct.
Local environment		
5.1	Annual investment in schemes to enhance or restore local environmental quality on non-operational land	£1.47m
5.2	Total land area being treated in schemes to enhance or restore local environmental quality on non-operational land during RIIO-T2	9.28 hectares
5.3	Net change in biodiversity units from network development projects granted planning consent in the year that impact the local environment	Not quantified
5.4	Number of regulator reportable environmental incidents in the last financial year (2022/23)	2

*Increase is mainly the result of increased use of gas turbine driven compressors supporting gas exports to Europe.

**Based on project data currently available.

Our commitments



How are we doing?


As a responsible business, we're committed to delivering environmental benefits for the communities we serve, while prioritising the issues that matter most to our customers, our employees and our wider stakeholders.

At the start of the RIIO-T2 regulatory period, we set out 30 commitments within our EAP to demonstrate how we, as a business, intend to reduce our impact on the environment.


These commitments are driven by both legislative and non-legislative factors and are grouped under five pillars:




Climate commitment



Resource usage



Natural environment



Leadership for change



Air quality

In this table, we have set out the progress we are making towards each of our EAP commitments. The final column provides you with an 'at-a-glance' indication of progress whereby:

- **Green** indicates progress against the implementation milestones is on track;
- **Amber** indicates progress is delayed but likely to be achievable before the end of the price control period; and
- **Red** indicates progress against milestones is at significant risk and highly likely to be missed.

Please note that we aim to hit all of our EAP targets before the RIIO-T2 price control period ends in March 2026. We are currently assessing how separation from National Grid in February 2023 alters the applicability and scope of our EAP targets.

EAP Commitment	Description	Implementation Milestones	Progress
Enable reduction in NOx emissions from the business	Maintain and operate our best-available-technology (BAT) equipment as the lead units for compression	Replace two compressor units within RIIO-T2	
Reduce methane emissions (CO2e) from leaks on the network	Establish a baseline for methane emissions leaks on the network through improved monitoring during RIIO-T2. Use that information to understand how to begin to reduce methane emissions leaks where possible	<ul style="list-style-type: none"> • Procure leak-detection equipment • Delivery plan for expanded methane detection produced, implemented, monitored and assessed 	
30% of our operational fleet replaced with alternative fuel vehicles (AFV) – 80 vehicles and charging points at 45 sites	We want to reduce carbon emissions from operational transport, such as vans and commercial vehicles, by 22% over RIIO-T1 levels	Evaluate progress and share lessons learnt in each year of delivery	It is likely that there will only be viable alternatives for 19% of the fleet instead of the 30% targeted. This is in line with current market availability and the requirements of our fleet vehicles
Reduce carbon emissions from our business transport by 10%	Through behavioural and administrative mechanisms reduce the mileage undertaken for business purposes	<ul style="list-style-type: none"> • Promote Alternative Fuel Vehicles (AFVs) on company car scheme • Install electric car-charging points at compressor sites • Create a transport strategy that will help us to focus on critical areas for carbon reduction 	Minor uplift in this financial year compared to last. This was largely driven by increased work on the NTS
Reduce carbon emissions from our office energy use by 20%	Reductions made by prioritising efficiency with energy-saving initiatives	<ul style="list-style-type: none"> • Work with our landlord to ensure improvements to the efficiency of the building's systems. • Energy-reduction plan aligned to our 'decarbonisation glidepath', the steps we need to take in the coming years to become carbon neutral and achieve net zero. • Annual energy reviews to monitor progress 	Minor uplift in this financial year compared to last due to more employees working from the office instead of at home

EAP Commitment	Description	Implementation Milestones	Progress
Purchase 100% of electricity for our offices from renewable sources	By switching suppliers, we can ensure that all of the electricity we buy supports renewable generation	<ul style="list-style-type: none"> • Agree scope and strategy for procurement events • Complete two tender events and award green-tariff contracts where some or all of the electricity we buy is 'matched' by purchases of renewable energy made by our energy supplier on our behalf 	
Continue to participate in the UK Emissions Trading Scheme (UK ETS)	The UK ETS drives reductions in carbon emissions using a cap-and-trade mechanism	Submit verified annual emission and activity level change reports each year and maintain assurance	
Install renewable generation on our operational sites for our own use during RIIO-T2 starting with compressor sites	To assess and facilitate investment opportunities for renewable energy generation projects across a number of operational sites, so we can balance our energy generation needs and meet our environmental commitments	<ul style="list-style-type: none"> • Steering group established • Refurbishment sites established for RIIO-T2 	
Achieve carbon-neutral construction for major projects starting in RIIO-T2 further implementing PAS 2060 and PAS 2080	We will achieve this by continuing our implementation of standards published by the British Standards Institution, detailing how organisations can become carbon neutral by reducing and offsetting their carbon emissions	<ul style="list-style-type: none"> • Embed sustainability reviews for major projects • Develop an offsetting policy to prepare for purchasing offsets in the future for any remaining carbon 	
75% of our top 250 suppliers (by category/spend) will have carbon-reduction targets	Engage with our suppliers to set carbon-reduction targets and ensure that sustainability is embedded in tender events and contracts	<ul style="list-style-type: none"> • Procurement objectives aligned to wider business objectives • Carbon emissions and sustainability processes embedded throughout Procurement 	
Deliver a science-based target (SBTi) for GT by 2023	Ensure that the business has a realistic yet ambitious target in place for reducing carbon emissions	<ul style="list-style-type: none"> • Decarbonisation strategy produced and aligned with SBTi • Decarbonisation implementation plan approved • Abatement options featured in RIIO-T3 plans. These are the changes that can be made to reduce carbon emissions 	Work on National Gas Transmission's SBTi-aligned decarbonisation strategy has been initiated. Detail on how NGT will achieve its decarbonisation goals and how these are embedded into its RIIO-T3 plans will be detailed in FY24 AER
We will implement the ISO 20400 sustainable sourcing process	By implementing ISO 20400 we will safeguard the environment and communities affected by the work of our suppliers	ISO 20400 assurance audit completed, improvement plan completed, and actions delivered	
We will reduce the waste intensity of our construction projects year on year	By embedding circular economy principles, we will reduce the waste intensity of our construction projects	<ul style="list-style-type: none"> • Make sure our data is reliable • Develop and implement a circular economy roadmap 	Reporting rates across all of our construction projects are currently too low to establish a representative baseline. We are working towards having better visibility of the waste levels across our projects from our contractors
On construction projects, we will achieve zero waste to landfill and we will increase recycling and reuse	Applicable to waste that can be diverted from landfill in accordance with the Carbon Trust Standard for Zero Waste to Landfill	<ul style="list-style-type: none"> • Make sure our data is reliable • Develop and implement a circular-economy roadmap 	Reporting rates have been too low to enable meaningful analysis
Measure the proportion of recycled materials used on construction projects and set a target during the RIIO-T2 period to increase from this baseline	Devise a method to measure the proportion of recycled materials used and set an ambitious target	Set a target for recycled materials based on how well we did in our first year and standards achieved elsewhere in the industry	
Pilot and implement circular economy principles for raw materials, goods procured and existing assets	Analyse current reuse projects and refine in line with circular economy principles. Implement the process to measure and quantify proportion of recycled materials used	Develop and implement a circular-economy roadmap	

EAP Commitment	Description	Implementation Milestones	Progress
Address 80 redundant assets, asset groups or sites in RIIO-T2	Prioritise highest risk assets. Decommission where assets are redundant, repurpose where possible, leave pipelines purged and filled with nitrogen	Achieve our annual programme for decommissioning works	
We will recycle 60% of our office waste by 2026	Through behavioural and administrative controls, we can increase the recycling rates	Work with our landlord to implement a waste-management-and-reduction plan across our site	
Extend the life of equipment where appropriate by refurbishing it	Refurbish equipment where possible	Establish a documentation of reused equipment, that contains information on reuse location, asset types, maintenance carried out for reuse at other sites	
We will reduce the waste we create at our offices (waste tonnage) by 20%	Through behavioural and administrative controls, we can reduce the waste we create in our offices	Work with our landlord to implement a waste-management-and-reduction plan across our site	Uplift in waste generation due to more people working from the office rather than at home. We expect to be generating less waste going forward
Reduce water use in our offices by 20% by the end of RIIO-T2 compared to 2019/20 baselines	Implement a water-reduction programme across our office locations	Engage third parties to manage water reductions by checking the accuracy of water-meter readings, checking for leaks and questioning behaviour to reduce water consumption	
Assess and report our risk from climate change on our assets on network operation during RIIO-T2 and beyond	Actively assess risks from climate change and report on them using mechanisms established by the Taskforce on Climate-Related Financial Disclosures (TCFD) mechanisms	<ul style="list-style-type: none"> • Site-specific assessments of climate change risks • Annual TCFD reporting completed and published 	
10% increase in environmental value on all non-operational land	We will achieve this by improving habitats, by encouraging populations of existing and new species and by having a positive impact on the habitats in the vicinity of our operations	Identify the best sites for significant long-term enhancement, deliver improvements on a yearly basis and review each year	
Act as custodians of our redundant sites by ensuring we reinstate them and achieve a net gain in environmental value	Balance the needs of the community and consider environmental enhancement in all decommissioning projects	Evaluate progress and share lessons learnt in each year of delivery	
Deliver 10% net gain in environmental value on all planned construction projects	Applied on all schemes that: lead to permanent or temporary loss of habitat; or adversely affect the condition of the habitat; or adversely affect the functioning of the ecosystem	<ul style="list-style-type: none"> • Compare all relevant schemes to similar schemes elsewhere in the industry • Explore net-gain options in line with the net-gain hierarchy to avoid, minimise, remediate, compensate. • Partner with external parties who can help us to offset the impact of our operations on environmental value 	We need more evidence of the inclusion of net gain considerations in relevant projects
Educate the public about environmental issues through outreach linked to major compressor emissions projects	Engage with local communities through school visits and local talks	<ul style="list-style-type: none"> • Explore options for engagement based on local priorities • Launch community grant funding • Partner with environmental organisations 	
An engaged workforce on environmental issues that leads by example	Implement a comprehensive employee engagement programme on environmental issues	<ul style="list-style-type: none"> • Train and engage employees on environmental topics via a variety of delivery methods • Evaluate employee engagement through yearly surveys 	
Sustainability is fully embedded in our decision making	The cost of carbon to the environment will be considered when we review project options	Sustainability is consistently included in our internal processes and in tender events	
Produce an AER	Publish environmental performance annually during the price-control period and engage with stakeholder feedback	Milestone delivery plans are created for each EAP target, monitored and reported quarterly to our Executive team.	
Lead in transparency on capital carbon and natural capital using data and tools to collaborate and drive environmental progress	Drive forward our industry in areas of sustainability where we are leading. Work collaboratively through industry working groups	Regular member of the Energy Network Association (ENA) environmental working group	Reporting rates of capital carbon and natural capital are too low at present to allow for transparency of results

Our commitments in detail

In the following pages, we explain why each of the commitments are important for the environment, share an update on how well we are implementing our action plan and any measurement we can offer that shows whether our actions are proving to be effective.

The report covers the period from 1 April 2022 to 31 March 2023.

The table below provides a summary of our RIIO-T2 Output Delivery Incentives (ODIs). These are agreed with Ofgem to encourage improvement beyond the existing commitments in our EAP. The environmental ODIs cover the measurable parts of our EAP and the existing Greenhouse Gas Emissions (GHG) incentive.

	Benefit threshold	Penalty threshold	Baseline levels	2021/22 level	2022/23 level	Baseline comparison
Reduction in our fleet emissions (tCO ₂ e)	-12% (1,538.24 tCO ₂ e)	8% (1,887.84 tCO ₂ e)	1,748 (2021 forecast)	1,751	1,797	+3%
Reduction in carbon emissions from our business mileage (tCO ₂ e)	-3% (1,559.76 tCO ₂ e)	-1% (1,591.92 tCO ₂ e)	1,608 (2019/20)	606	741	-54%
Percentage of our operational and office waste that is recycled (% value)*	52%	44%	–	87.4%	96.8%	–
Reduction in the waste we create at our offices (tonnes)	-3% (52.96t)	-1% (54.05t)	54.60 (2019/20)	28	47	-14.7%
Reduction in water use for our main offices (m ³)	-3% (7,158.6m ³)	-1% (7,306.2m ³)	7,380 (2019/20)	1,699	3.9% increase	-47%
Increase in the environmental value of our non-operational land (£m)	1.4%	0.6%	32.92 (2020/21)	£0.7m increment	£1.5m increment	4.5%

* Waste categorised as “diverted” is currently assumed to be “recycled”. We are working with our waste contractor to gain more detailed data on the specific quantities of diverted waste that is recycled. Once such data is available, the percentage of waste recycled may change.





Climate commitment

COMMITMENT 1

Reduce methane emissions (CO₂e) from leaks on the network

Status update:

We have procured leak-detection equipment to support an expanded leak-detection and repair programme for the NTS.

Delivery planning is underway by the National Gas team. This expanded programme will establish a baseline for methane emission leaks by the end of RIIO-T2 that, among other things, will help us to measure how well we are doing beyond that date.

We also made a special submission to Ofgem in October 2022 so that we could expand National Gas Transmission's periodic leak-detection repair programme beyond compressors and terminals.

This will give us a comprehensive view of leak performance covering all of our transmission assets above ground. It goes well beyond our original RIIO-T2 commitments.

In this financial year (2022/23) as planned, we surveyed eight compressor and terminal sites as part of our existing leak-detection and repair programme.

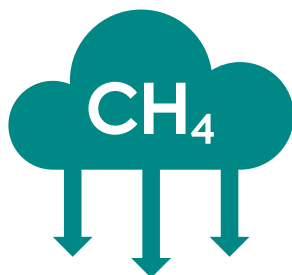
Performance trends

This year (2022/23), we emitted

251 tonnes

of methane compared with last year's performance of

255 tonnes



COMMITMENT 2

30% of our operational fleet replaced with AFVs (80 vehicles and charging points at 45 sites)

Status update:

We want to move away from traditional vehicles powered by an internal combustion engine. To help

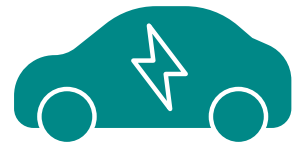
achieve this, we plan to spend £1.5 million on installing more electric-charging capacity at our locations.

Presently, we have installed 7.4kW of capacity at many of our National Gas Services (formerly PMC) locations including Knowsley, Ambergate, Glasgow and Hitchin.

We also have plans to install electric chargers at more NGS locations as well as at our compressor stations.

Performance trends

The current fleet is made up of 247 commercial vehicles (12 of these are heavy goods vehicles). Eighty vehicles should be replaced to achieve our 30% target. By the end of the financial year (2022/23), five vehicles were electric (equating to 6.25% of the fleet) compared to three electric vehicles in the previous year.



Unfortunately, only 19% of our fleet can be replaced (rather than our 30% target) due to no viable, alternative vehicle on the market, apart from small panel vans.

Crucially, a new telematics system has been installed across our fleet that will improve the way we monitor cars, trucks and other assets using GPS technology and on-board diagnostics (OBD). This will provide our organisation with better data to help us reduce our emissions.

COMMITMENT 3

Reduce carbon emissions for our business transport by 10%

Status update:

As a result of increased project work on the NTS, there was an increase in emissions, compared to the previous year.

However, we have introduced new technological controls and ways of working that will continue to reduce our emissions associated with business transport.

Performance trends

The emissions associated with company cars completing business mileage in 2022/23 was 505tCO₂e in comparison to 494tCO₂e in 2021/22.



Climate commitment cont.

COMMITMENT 4

Reduce carbon emissions from our office energy use by 20%

Status update:

Our plans to reduce energy include: installing more personal sensors and lighting that can detect light levels; reducing the temperature of under-floor heating when people are not working their core shifts; taking cooling towers offline in winter months instead of leaving them on standby; reviewing shower usage.

Performance trends

In the last financial year, our share of electricity usage at National Grid House (where we are based) equated to 457 tonnes of CO₂e, while our gas usage equated to 231 tonnes of CO₂e. At Warrington Archives (our other office site), the equivalent of 16 tCO₂e of electricity was used alongside 9 tCO₂e of gas (equating to 713 tonnes total). There is no comparable data for previous years.



COMMITMENT 5

Purchase 100% of electricity for our offices from renewable sources

Status update:

We're developing a renewable energy strategy that aims to change our electricity supplier contracts to green energy contracts where the electricity is supplied by renewable sources. The current contracts for the supply of our electricity are approaching renewal in the next financial year.

COMMITMENT 6

Continue to participate in the UK ETS

Status update:

The UK ETS is a government-run scheme designed to reduce greenhouse gas emissions by creating a market for carbon reduction through tradable allowances. Assurance lines continue to operate to ensure compliance with the UK-ETS. No improvement conditions were identified within the last financial year (2022/23). Following separation from National Grid, permit variations were submitted to reflect the business name change.

COMMITMENT 7

Achieve carbon-neutral construction for major projects that were started in RIIO-T2

Status update:

The Hatton compressor upgrade is our only project in its delivery phase that contributes to this commitment. We are engaging with our partners on the project to make sure the work is in line with PAS 2060 and PAS 2080 standards, the internationally recognised standards for carbon neutrality from the British Standards Institution. We are currently reviewing options for two medium-sized combustion plant projects at Kings Lynn and Peterborough. Both schemes fall under this target and will continue to use the Carbon Interface Tool (CIT) throughout their project lifecycles in order to challenge embodied carbon in design.

The CIT allows us to quantify the carbon associated with a construction project (whether that's the materials used, construction activities, or employees travelling to site for the purpose of the project). Putting a number to this tells us where reductions could be made.

COMMITMENT 8

75% of top suppliers (by category/spend) will have carbon-reduction targets

Status update:

Following separation from National Grid, National Gas has seen a reduction in both spend and supplier base. We have mapped out our new supplier base, which now comprises around 1,500 suppliers. This includes 50 Class 1 suppliers who, between them, represent 66% of our influenceable spend, while 130 Class 2 suppliers represent 18% of our non-payroll spend that procurement can influence. The remaining 16% of this 'influenceable' spend sits with 1,320 suppliers. Plans for engagement on carbon and wider metrics for Environment, Sustainability and Governance are being tailored to the different supplier classes that exist.

Performance trends

In our last financial year, 85% of our top-50 suppliers committed to having their own carbon-reduction programmes. This equates financially to 56% of our influenceable spend.

Climate commitment cont.

COMMITMENT 9

Install renewable generation on our operational sites for our own use

Status update:

A cross-business steering group is in development to drive the target forward.

COMMITMENT 10

Deliver a science-based target for National Gas Transmission by 2023

Status update:

We are producing a decarbonisation strategy and emission-reduction roadmap that will be aligned with a SBTi. We will launch this by the end of 2023.

COMMITMENT 13

On construction projects, we will achieve zero waste to landfill and we will increase recycling and reuse

Status update:

Reducing waste and diverting waste from landfill are driven by administrative, technological and behavioural factors. Site waste-management plans and sustainability action plans are two tools through which we can boost our performance within this commitment. In the last financial year (2022/23), we created a visual dashboard that automatically calculates the diversion and recycling rates of each project as they submit their waste data. The result is a transparent league table of waste performance for our projects that provides both high-level information and the details of individual waste collections as required.

**61.76 tonnes
per £100K spend** 

Performance trends

In the last financial year (2022/23), we calculated a **baseline figure for our waste intensity** based on the amount of waste we generate **for every 100m²** of the area where we are operating. Even though we only had enough suitable data for 20% of our active projects, it still gave us a useful indication as to how we were performing. The indicative figure is **61.76 tonnes per £100K spend**. We will now calculate our waste intensity figure every 12 months to account for peaks and troughs in the data. All subsequent calculations will be adjusted for inflation.

COMMITMENT 14

Measure the proportion of recycled materials used on construction projects and set a target during the RIIO-T2 period to increase from this baseline

Status update:

In March 2023, we embedded a way to measure our proportion of recycled and reused materials into the CIT, where the materials used in a project are already entered for the purpose of calculating embodied carbon. The CIT will capture data throughout the next financial year (2023/24) so that a baseline can be set for subsequent years, backed up by comparisons taken from around our industry.



Resource usage

COMMITMENT 11

Implement the ISO 20400 sustainable-sourcing process

Status update:

It is our belief that our processes are in line with ISO 20400, the international standard that provides guidance on sustainable procurement. In the next financial year, our internal assurance teams will undertake a gap analysis exercise between what we do at the moment and the ISO 20400 standard.

COMMITMENT 12

Reduce the waste intensity of our construction projects year-on-year based on a 2019/20 baseline

Status update:

See Commitment 13 for the latest update on this commitment.

Resource usage cont.

COMMITMENT 15

Pilot and implement circular economy principles for raw materials, goods procured and existing assets

Status update:

Circular economy is a model of production and consumption that involves keeping existing materials in use for as long as possible by a range of methods including reusing and recycling them. Towards the end of the last financial year (2022/23), we relaunched an internal material-sharing platform to promote circularity and reuse. The platform allows employees to list and share work items they no longer need (but that still function), so that other people from a different site have a chance to collect and reuse it. During the next financial year (2023/24), we will track any financial and carbon benefits associated with the relaunch of this platform.

COMMITMENT 16

Address 80 redundant assets, asset groups or sites in RIIO-T2

Below, you can read a case study showing how we are addressing redundant assets.

Case Study: FutureGrid

We are demonstrating whether our existing transmission network could operate with hydrogen rather than natural gas through a programme called FutureGrid.

As part of the programme, we have built an offline test facility by adapting decommissioned assets and equipment from our NTS. This will help us to understand how they function with hydrogen and start providing evidence to support a safety case for hydrogen operations.

Using decommissioned assets rather than building new assets will give us the correct data to support our vision of transporting hydrogen through the existing NTS while minimising the carbon footprint involved in making the changeover.

We have engineered all of the assets in the table either to the facility or to carry out standalone tests, to assess some more intricate areas of hydrogen impact upon our assets.

Asset types	Number used as part of FutureGrid Phase 1
Valves	57
Filters	4
Flow Control Valves	2
Meters	4
Non-Return Valves	1
Pre-Heater System	1
Regulators	7
Pipe	5 x 12m lengths

COMMITMENT 17

Extend the life of equipment where appropriate by refurbishment

Below, you can read a selection of case studies showing how we are implementing circular economy principles by extending the life of equipment.

Case Study: Sleeve repairs in RIIO-T2

During RIIO-T2, National Gas Services has fitted 25 sleeves on pipelines that displayed signs of corrosion. This prevents us having to cut out a section of pipe and re-laying it, thus extending the life of sections of pipe that are otherwise operating safely.

Case Study: Other works to maintain assets, including Heat Exchangers

Maintenance work is carried out to ensure we can operate our network safely and reliably. This work also means we do not replace or dispose of our assets without good reason. For example, we have been repairing Heat Exchangers (HEX) on the network at locations such as Corby Power Station Centrax Offtake AGI. This includes plugging of gas tubes within the heat exchanger, where possible, or retubing.

Resource usage cont.

COMMITMENT 18

Reduce the waste we create at our offices (waste tonnage) by 20%

Status update:

See Commitment 19 for the latest update on this commitment.

We reduced the waste produced in our offices by 14.7% against our baseline and we're on track for our 20% goal in 2026

COMMITMENT 19

Recycle 60% of our office waste by 2026

Status update:

An uplift in the volume of office waste has been experienced this financial year in comparison to the last financial year. This uplift is likely to be related to increased office occupation following higher levels of homeworking during Covid-19.

Performance trends:

For the period from **2019 to 2020**, we established a baseline figure for the amount of **office waste we produced of 54.6 tonnes**.

In **2021 to 2022**, 28 tonnes of office waste was produced, with **75% recycled**.

In **2022 to 2023**, **46.59 tonnes of office waste** was produced with **98% recycled**^{*}. This positive performance means we are on track to hit both commitment 18 and 19 in 2026.



COMMITMENT 20

Reduce water use in our offices by 20%

Status update:

National Gas has become a beneficiary of Aquafund. This is a Government-backed grant scheme administered by utility management specialist ADSM to help public-sector organisations reduce their water use. ADSM are working across our sites (including operational sites and the offices we own) to identify where water savings can be made. From the revenue generated by water savings, 1% is donated to water.org, a not-for-profit organisation working to bring water and better sanitation to worldwide communities. In the Annual Sustainable Water Report (2022/23), produced by ADSM for National Gas, we report that the donations generated by water savings at our sites have helped to provide access to safe water or sanitation for more than 2,300 people in need.

Performance trends

We set a baseline figure for water use in our 2019/20 financial year of 7,380m³. Our office water usage for our last financial year (2022/23) was 3,910m³, up from 1,699m³ in the previous year. The increase was caused by having more people in our offices following a period of increased homeworking during Covid-19. Additionally, improved data availability allowed us to report water usage for the additional office site, Warrington Archives, in 2022/23.



We hope that continued work by ADSM will help to make reductions wherever possible, across both our office and operational sites.

COMMITMENT 21

Assess and report on our risk from climate change on our assets and network operation during RIIO-T2 and beyond

Status update:

We are undertaking a climate-change risk assessment at our sites and prioritising them for investment based on those which present the highest risk from climate change as a piece of Critical National Infrastructure. Where we believe that there is an immediate risk, we are building these investments into our RIIO-T3 business plan.

^{*} Waste categorised as "diverted" is currently assumed to be "recycled". We are working with our waste contractor to gain more detailed data on the specific quantities of diverted waste that is recycled. Once such data is available, the percentage of waste recycled may change.



Natural environment

COMMITMENT 22

10% increase in environmental value on all non-operational land

Status update:

For the last financial year (2022/23), our efforts for this commitment have been focused on working with two organisations: The Conservation Volunteers and Creekside Education Trust Limited.

Both organisations provide environmental education to communities while working to improve the condition of the natural environment.

Through our partnership with Creekside, we hope to support them in meeting their vision: 'To build a vibrant community in the heart of London where people and wildlife can thrive'.



Performance trends

We **met our ambitious target** to increase the value of the portfolio of **our non-operational land by 3.15%** in the last financial year (2022/23).

This means we are **on track to deliver at least a 10% increase** in the value of our non-operational land by the end of this regulatory period.

COMMITMENT 23

Act as custodians of our redundant sites by ensuring we reinstate them to a net gain in environmental value

Status update:

A net gain in environmental value is one where infrastructure developers leave the environment in a measurably better state than when they started work. We are evaluating net gain opportunities during decommissioning to understand the best options across our portfolio of land.

COMMITMENT 24

Deliver 10% net gain in environmental value (including biodiversity) on all planned construction projects

Status update:

Biodiversity Net Gain (BNG) is a way of making sure the habitat for wildlife is in a better state than it was before development took place. We are completing and refining BNG assessments for appropriate projects. In particular, upgrading the Hatton compressor will result in the loss of three biodiversity units. We are exploring options with the Lincolnshire Chalk Streams Trust to address this negative impact.

COMMITMENT 25

Educate the public about environmental issues through outreach linked to major compressor emissions projects

Status update:

Work is ongoing to launch our National Gas Community Grant Fund. This will support local projects run by charities and community groups where they provide social, economic and environmental benefits.



Leadership for change

COMMITMENT 26

An engaged workforce on environmental issues that leads by example

Status update:

Two all-employee webinars were delivered in the last financial year (2022/23) that focused on environmental themes. The first webinar on our business EAP was delivered to over 180 attendees. The second webinar on waste was delivered to over 150 attendees. Aside from these events, compulsory environmental and sustainability awareness training was relaunched, and a sustainability champions network was set up.

Commitment 26 continues on the next page ►

Leadership for change cont.

Performance trends

10% of our employees responded to a survey about our Environment, Social and Governance (ESG) culture. They told us that the highest ESG priorities to the business for them is supporting charities and supporting a fair energy transition.

COMMITMENT 27

Sustainability is fully embedded in our decision making

Status update:

Sustainability is embedded in the Network Development Process for construction projects. This encourages both discussions and decisions with waste, biodiversity and embodied carbon in mind at the very start of the project.

COMMITMENT 28

Produce an AER (including reporting on our Business Carbon Footprint)

Status update:

The Transmission System Operators (TSOs) collectively gained feedback last year to the effect that the report was too corporate, repetitive in places, and that much of the data was reported elsewhere to Ofgem. Unfortunately, no change to guidance was issued this year. However efforts have been made this year to reduce repetition and corporate jargon.

COMMITMENT 29

We will lead in transparency on capital carbon and natural capital using data and tools to collaborate and drive environmental progress

Status update:

Capital carbon refers to the emissions associated with creating an asset such as a compressor. Natural capital refers to the elements of the natural environment that provide valuable goods and services to society. Our transparent and consistent approach to calculating capital carbon relies on using the CIT, which we designed working with carbon specialists from Mott Macdonald specifically for this purpose. This tool is continually updated in response to potential improvements and to maintain its applicability to our projects. Our transparent and consistent approach to natural capital evaluation relies on using the NATURE natural capital tool on all applicable projects. This tool

was developed through industry collaboration and is widely recognised as the industry standard.



COMMITMENT 30

Enable reduction in NOx emissions per hour of gas turbine running from the business by the end of RIIO-T2 in March 2026

Status update:

Our strategy for this commitment involves the installation and use of best-available technologies (BATs). We are committed to replacing and commissioning at least two compressor units in RIIO-T2 while also starting work to replace more of them. By the end of the last financial year (2022/23), we were on track to have five units commissioned across three sites; one unit at Hatton and two units each at Peterborough and Huntingdon.

Performance trends

We measure our NOx emissions by the amount we generate for every hour that our equipment is in operation. Our NOx per hour for the year 2021 to 2022 was 8.90kg/hr and for the year 2022 to 2023 was 6.29kg/hr.



Our commitments in action



Decarbonisation and the impact of climate change

The UK is a global leader in decarbonisation, with goals of achieving net zero by 2050, five-yearly carbon budgets and a plan to help reduce greenhouse gas emissions by at least 68% by 2030, from 1990 levels.

As a business, our fundamental purpose is to deliver a clean energy future for everyone, while operating a resilient and reliable network.

Our resilient network is already being tested by climate change and extreme weather, both of which add additional pressures and challenges to the way in which we operate the network and manage our assets.

Adapting to climate change now and reducing the impact of our operations on the environment are crucial if we are to succeed in meeting our business purpose.

To help us do this, we are exploring the feasibility of converting the NTS to carry hydrogen as a greener alternative to natural gas and facilitate biomethane connections.

On these pages, you can read two case studies that show some of the progress we are making towards this goal.

In addition to these case studies, National Gas continues to focus on its own greenhouse gas emissions and look for ways to reduce them.

The following table shows the number of enquiries received, the capacity of connections and the actual flow of biomethane and other green-gas connections to the transmission system.

	Unit	2021/22
Biomethane connections		
Enquiries	Number	1
Connections	Number	1
Capacity connected	SCMH	200/4800scm/day
Average monthly flow rate	SCMH	0.000868 scm/hr
Volume of biomethane injected	GWh	0.0009550
Other green gas		
Enquiries	Number	None recorded
Connections	Number	None recorded
Capacity connected	SCMH	None recorded

	2022/23
Biomethane connections	
Enquiries	1
Connections	1
Capacity connected	200/4800scm/day
Average monthly flow rate	0.000868 scm/hr
Volume of biomethane injected	0.0009550
Other green gas	
Enquiries	None recorded
Connections	None recorded
Capacity connected	None recorded



Case study:

Compression, hydrogen and the NTS

Through the Strategic Innovation Fund (SIF), we're working to build an understanding of how our current compression equipment can be adapted for hydrogen and hydrogen blends. Gas in the NTS is moved around the country by a complex system of 24 compressor stations and 70 individual compressor units.

Compression is required to provide 'flow and build' line pack (which is the total volume of gas contained within the system) when demand for gas is higher in certain locations on the network. Compression therefore ensures that gas is supplied to our customers when they need it.

We undertook an initial discovery exercise to determine the full technical requirements for potential compression drive systems and compressor technologies.

This was followed by a main project to explore the feasibility of repurposing compressor assets, as well as modelling future compression requirements.

The cost of a new compression system is approximately £60m per unit. If we can repurpose our existing assets instead, this would result in considerable cost savings for consumers.

The project showed that our gas turbines could be modified and fuelled with up to 100% hydrogen, while our compressors could operate with up to 50% hydrogen. Above 50% hydrogen, a compressor upgrade would be required.

We've now applied for funding for a second project (the HyNTS Compression Beta project) where a gas turbine that's representative of the current fleet will be fuelled by different blends: first with hydrogen up to 25%; then, following modifications, with 100% hydrogen.

This will provide technical and safety evidence for the repurposing of our current gas turbine fleet.

Following this, the full compression system – including the power turbine, gas compressors and all the cab and ancillary equipment – will undergo offline testing at our FutureGrid hydrogen test facility.

We intend to demonstrate that our assets can be repurposed for hydrogen blends and 100% hydrogen.

A compression test loop will be constructed out of decommissioned NTS assets to test the compressor systems for a range of hydrogen scenarios.

If our funding application is successful, this project will provide a technical demonstration of the system's capabilities and establish a strategy for the transition of the UK NTS compression system to hydrogen.

Case study:
Multiple gas detection

As part of our ongoing network maintenance, we use gas-sensor technology to monitor the concentration of flammable gases present within a work area. These safety sensors will issue an alert when the levels are close to being potentially dangerous.

The gas-safety sensors we use currently across our network are only capable of detecting the quantity of natural gas in the system.

If we want to move our network to a greener gas alternative, we need sensors that can detect varying blends of natural gas and hydrogen.

We're running a project to test NevadaNano's Molecular Property Spectrometer (MPS) multi-gas sensor.

This sensor should simultaneously analyse mixes of hydrogen and natural gas with a single calibration,

enabling us to locate and quantify escaping emissions.

We'll be taking a detailed look at the sensor technology and how it relates to other gas detection systems on the market. This will include a laboratory-based demonstration with various gas types and blends of hydrogen and natural gas.

We'll use the FutureGrid test facility to conduct a physical demonstration with various hydrogen blends.

Once we've determined the best locations for the sensors, leak monitoring will be carried out on site for 12 months.

Finally, we'll be demonstrating the technology with natural gas at an existing operational site. This will include a site survey to determine suitable locations where each sensor can be installed, so we can effectively monitor if there are any escaping emissions on site for three months.





How we define our emissions

We are committed to becoming net zero by 2050, with ambitions for 2040. This will be achieved when the amount of greenhouse gas we put into the atmosphere from our business activities is no more than the amount taken away.

It's a massive challenge, but by the end of 2023 we will establish what we call a 'glidepath' to meet this net zero target while aligning with the science-based targets methodology described in the 'climate commitment' section of our commitments.

However, this target will not be certified by the SBTi because the organisation has withdrawn access to its frameworks for companies whose portfolios contain more than 50% fossil fuels.

Our current RIIO-T2 target is to reduce our Scope 1 and 2 emissions (see below) by 0.018 kilotonnes of CO₂e per year so we can achieve total Scope 1 and 2 emissions of 0.431 kilotonnes by the end of the price control period.

Once the SBTi aligned glidepath is in place, these targets will be amended.

Scope 1 and 2 emissions (aligned to NGT RRP): Main priorities

Most of our business carbon footprint is made up of the emissions from natural-gas fuel combustion on our network.

This process powers our compressor fleet within the NTS. In the last financial year (2022/23), it accounted for 76%* of our overall Scope 1 and 2 emissions, as reported within our RRP. These emissions occur due to the combustion of natural gas in our gas-turbine-driven compressor fleet on the NTS. We are committed to exploring the installation of compressors across our network that emit less carbon, while ensuring resilience and security of supply.

In addition to fuel combustion, Scope 1 emissions also originate from our transport activities, emissions that escape from our operations and energy consumption (excluding electricity which is Scope 2).

For example, 12.5% of overall emissions in the last financial year were associated with venting gas from our compressors. To tackle this, we are already limiting venting to those situations when we have no alternative solution.

Scope 2 emissions refer only to our electricity consumption. In the last financial year, this accounted for 9% of our total business carbon footprint.

*This data aligns with NGT's RRP, but does not include all sources of venting or estimates of losses of methane from gas emitting equipment.

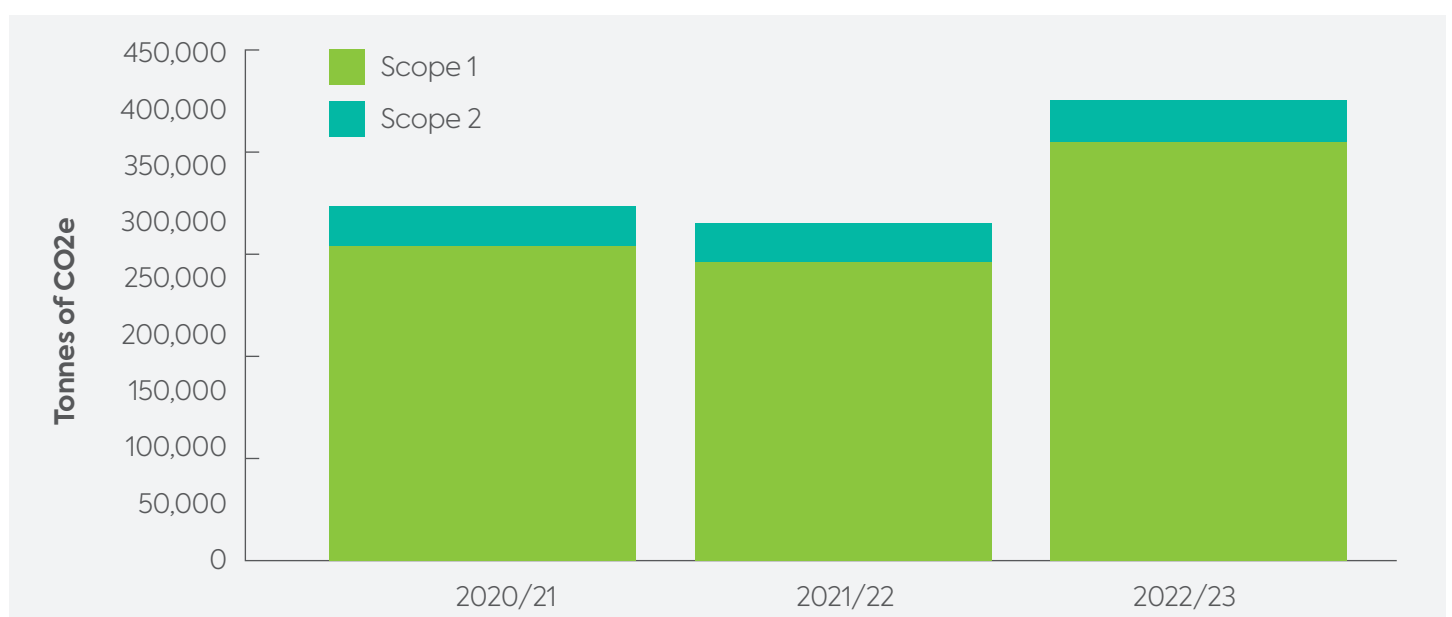
How we define our business carbon footprint in terms of Scope 1 and Scope 2 emissions by tonnes of carbon dioxide equivalent (tCO₂e)

Scope	Emission	Category	FY 2020/21	FY 2021/22	FY 2022/23
Scope 1	Energy consumption (excluding electricity)	Energy consumption	553	324	643
		Total	553	324	643
	Transport	Direct commercial vehicles	1,572	1,751	1,887
		Business mileage	331	494	505
		Total	1,903	2,245	2,392
	Venting emissions Fugitive emissions	Venting (compressor only)	52,025	51,252	50,822
		Leak detection & repair	Not reported	1,039	5,813
		Total	52,025	52,345	56,635
	Fuel combustion	Diesel	0	0	0
		Natural Gas	223,287	208,051	307,987
		Other fuels (as applicable)	0	0	0
Total		223,287	208,051	307,987	
Total Scope 1			277,768	262,912	367,657
Scope 2	Electricity consumption	Electricity consumption	33,323	33,612	37,695
		Fleet & company cars (EVs)	0	0	38
		Total	33,323	33,612	37,733
	Total Scope 2			33,323	33,612
Total Scope 1+2	Total scope 1 + 2 BCF (excluding shrinkage)		311,091	296,524	405,390

This table and chart aligns with NGT's RRP, but does not include all sources of venting or estimates of losses of methane from gas emitting equipment.

The composition of total Scope 1 and 2 emissions excluding losses and shrinkage over time, including our business carbon footprint target for the end of RIIO-T2.

Business Carbon Footprint: Scope 1 and Scope 2 emissions



Scope 3 emissions (aligned to NGT RRP): Waste and business travel

As of Year 2 of the RIIO-T2 period, we have assessed two out of seven of our Scope 3 GHG Protocol emission categories, namely Category 5 (waste) and Category 6 (business travel).

Our Category 5 reporting involves waste generated at our office and operational sites. The emissions from this category were reported as part of our business carbon footprint for the first time in our last financial year, using the appropriate conversion factors produced by the Department for Energy Security and Net Zero (DESNZ) and Department for Business, Energy & Industrial Strategy (BEIS).

Category 6 includes business travel undertaken by air, rail, hire cars and in employees' personal vehicles.

To calculate the carbon emissions associated with these activities, the appropriate DESNZ conversion

factors are used. The last financial year was the second year of reporting this category within our business carbon footprint.

We have already started work on a questionnaire to generate data for Category 7 (employee commuting). We'll be asking our employees how far and how often they travel to work (considering hybrid working options) and the mode of transport they use.

Although some assumptions may be made, we want this figure to be representative of the travel undertaken by all employees, so we can identify a baseline figure to quantify the emissions and the best way to reduce them.

All other categories will be focused on as part of work on our glidepath to net zero taking place in Year 3. This work will help to identify a baseline for emissions for these additional categories too, as well as highlighting options for reduction.

Scope 3 emissions: What they are and how well we are measuring them

Category	Methodology and assumptions	Data Source	Confidence in data (completeness and accuracy) RAG status
Purchased goods and services	To be determined during Year 3 through Decarbonisation Glidepath process		Not yet available
Capital goods	To be determined during Year 3 through Decarbonisation Glidepath process		Not yet available
Fuel and energy related activity	To be determined during Year 3 through Decarbonisation Glidepath process		Not yet available
Upstream transportation and distribution	To be determined during Year 3 through Decarbonisation Glidepath process		Not yet available
Waste generated in operations	Tonnes of waste converted to tCO ₂ e using DESNZ/BEIS current conversion factors	Waste Contractor Reports for waste totals converted to tCO ₂ e using the relevant conversion factor	First year of reporting – no cross-year comparison possible and some assumptions required for waste streams where conversion factors were not available
Business travel	This category includes business mileage not already included within Scope 1 and 2 emission reporting, such as travel undertaken via rail, air, hire vehicles and personal vehicles	Internal and external reports that quantify mileage taken (via booking systems or expense entries)	
Employee commuting			Not yet available

Additional emissions

In addition to the carbon footprint reported as part of the RRP, NGT has further Scope 1 emissions. For financial year 2022/23, these are detailed below:

Scope	Emission	Category	Units	FY 2022/23
Scope 1	Fugitive emissions	Pipeline and AGIs	tCO ₂ e	26,336
	Venting emissions	Venting (Others)	tCO ₂ e	48,785
		Incomplete combustion	tCO ₂ e	7,419



**Embodied carbon:
Crucial for understanding our true position**

The UK Green Building Council defines embodied carbon as ‘the total greenhouse gas emissions (often simplified to ‘carbon’) generated to produce a built asset’. This includes ‘emissions caused by extraction, manufacture/processing, transportation and assembly of every product and element in an asset’.

Understanding how much embodied carbon is generated by our business is therefore crucial if we want to achieve our net zero ambition. But it is not always a simple matter to decide on an accurate figure for these emissions.

Our internal CIT allows us to record the embodied carbon of our construction projects. We are continually refining it to make sure it is applicable to our future transmission system.

We do this by gathering and addressing feedback from interested parties, adding new assets and materials to the tool as they become available, and updating any figures in line with the current version of a database of internal combustion engines used in our network.

The CIT calculates the carbon footprint of a project, comparing the ‘in design’ figure to the ‘as built’ figure. It can also be used at other stages of the network development process to compare the embodied carbon of different design options.

Reductions in carbon on a project can now be directly related to the actions we take, for example changing the design, using different materials and so on.

For example, we are identifying new low-carbon concrete alternatives coming onto the market, seeing how these can be embedded into the design of new projects and whether they can become industry-standard materials in the coming years.

Due to the time lag between designing and completing a project – which can span several years – limited data about embodied carbon is available for the last financial year.

We are taking steps to progress the quality of this reporting, for example by including modules about it in colleague and contractor training programmes.



Energy shrinkage and emissions within the NTS

NTS Shrinkage is a gas-industry term describing energy we use to operate the NTS, and other energy lost from the system, that cannot be charged to consumers or allocated to another user. These costs are recharged back to users as part of general non-transmission charges.

As a NTS Shrinkage provider, we are responsible for managing the procurement of energy (and any subsequent emissions from using this energy) covering three broad areas:

- Own Use Gas, or the fuel we use to run our compressors
- Calorific Value Shrinkage, which is gas that cannot be billed for various reasons under the terms of the Gas (Calculation of Thermal Energy) Regulations 1996 (amended 1997)
- Unaccounted for Gas (UAG), which is the volume of gas left after we have accounted for parts of the system we can measure.

For RIIO-T2, we are working within a shrinkage incentive scheme that encourages us to minimise the energy costs associated with operating the network.

Under the scheme, annual gas procurement costs from 2022 to 2023 onwards are compared to benchmark costs that were based on our forecast volume requirements, the actual volume supplied and the price of gas in the markets at the time.

A breakdown of gas shrinkage in the NTS per gigawatt hour (GWh), which is the quantity of energy produced or consumed by a piece of equipment for one hour at a power level of one gigawatt.

	Unit	2021/22	2022/23
Compressor fuel usage	GWh	1,139	1,648
Calorific Value Shrinkage	GWh	317	491
UAG	GWh	2,051	4,655
Natural Gas vented from all compressors	Tonnes	51,252	50,822

National Gas undertook projects to investigate why UAG has increased since November 2019. These projects include historical and future patterns or trends. The projects and their status are described in the table below:

Project / Initiative	Target Completion Date	UAG / CVS	Outcome
A triage process that identifies the source of data anomalies	Mini project for period of High UAG	UAG	Closed: End-to-end process maps have led to a smoother internal process to raise, log and rectify issues that are meter or telemetry related.
Linepack calculation review	Mini project for period of High UAG	UAG	Closed: A review of the calculation and the use of fixed temperatures versus ground temperature identified some marginal bias in the Linepack model but, as UAG uses a Delta Linepack, any differences seen on a given day seem to net off over a period.
Understanding UAG as a percentage of throughput	Mini project for period of High UAG	UAG	Closed: UAG as a percentage of throughput had increased in quarter 2 of 2022 with a step change from 0.2% to 0.6% when compared to quarter 2 in 2021.
Venting	Mini project for period of High UAG	UAG	Closed: Vented gas as a result of maintaining the NTS Network is calculated and provided to Meter Assurance as part of the Non-Routine Operation (NRO) guidelines. The vented volumes of gas calculated over this period were very small and not significant. They were therefore ruled out as a cause of the UAG trend.
NTS maintenance	Mini project for period of High UAG	UAG	Closed: Maintenance dates and records were compared to UAG trends to identify any correlation although there was no evidence of maintenance being a cause for the high UAG.
Site elimination	Mini project for period of High UAG	UAG	Closed: Individual site profiles were analysed as well as looking for correlation between UAG and the number of sites flowing since 01/01/22. There were no obvious outliers from either of these investigations.
Interconnector & LNG trends	Mini project for period of High UAG	UAG	Closed: Due to the higher volumes of gas seen at both LNG Terminals and the two Interconnection Points (IPs) at Bacton, it was prudent to compare UAG to historical periods when both LNG and IPs had large flows. There was some correlation observed with LNG when compared with UAG, which has been highlighted in previous reports but deeper dives into analysing the data at site level has not identified any error with the measurements. NGT continues to monitor these trends.
Linepack calculation improvements	Wider 2022/23 reporting period	UAG	Closed: Although there is potential small bias within the Linepack calculation due to fixed temperatures, the bias would be constant. UAG uses the Delta Linepack (difference between daily Linepack) and the error nets off over time.
<ul style="list-style-type: none"> Continuous improvement / process improvement to the Settlements Process and ability to validate site Measurements within Entry and Exit Closeout 	Wider 2022/23 reporting period	UAG	Closed: A review has been completed; daily checks are captured which feed the high UAG investigation process. Current tools and new requirements are being documented, which will be supported by a new data platform. With new data models becoming available over time, this review process will be ongoing with new projects arising from it each year. Therefore, further improvements to the process will roll out into the next reporting period.
Linepack analysis using ground temperature	Wider 2022/23 reporting period	UAG	Closed: This project identified a potential small bias within the Linepack model but for UAG purposes, the magnitude of error would be negligible.
Consider impact of OBA on UAG calculation	Wider 2022/23 reporting period	UAG	Closed: Although OBA can impact daily UAG, this nets off over a few days so therefore has no impact on UAG and Shrinkage.
Investigate the impact of a lower Wobbe Index at NTS input terminals and how it could influence CVS	Wider 2022/23 reporting period	CVS	Closed: There is potential for a reduction in CV if Wobbe is reduced due to an increase in inert components. This could impact CVS in areas of the Network where gas cannot be blended. NGT may need to work with GDNs if certain terminals are impacted.

For further information and narrative regarding shrinkage and access to the archive of UAGCVS report, please use this link: <https://www.nationalgas.com/balancing/unaccounted-gas-uag>.



Sustainable procurement to boost carbon reduction

During RIIO-T1, National Grid asked suppliers to include sustainability, and in particular carbon reduction, as part of their performance measurement in tenders totalling over £500m.

The weighting of the questions was awarded 5%.

It was established that, for every 10% of carbon reduced at the design stage of a project, there was a 6% reduction in the total cost of the project.

As a business, we want to demonstrate to our suppliers that sustainability is important to us. One way we can do this is by ensuring that sustainability is given strong weighting within tender events.

During RIIO-T2, a common set of sustainability questions has been established for all tender events and the weighting increased to 10%.

There are many procurement-related targets included in our business EAP.

For more details, please see the earlier section on page 14 for an update on progress in relation to aligning to the ISO standard 20400, as well as more details on how we make sure our principal suppliers have their own carbon-reduction targets.

	Unit	2021/22	2022/23
Percentage of suppliers (by value) meeting licensee's supplier code	%	Not actively measured	Not actively measured
Percentage of suppliers (by value) that have their own sustainability metrics or KPIs	%	-*	66%

Efficient use of resources and waste

We recognise that the use of resources, waste and climate change are inherently linked.

That's why our EAP includes ten targets in relation to using resources responsibly, such as addressing redundant assets, extending the life of our assets, implementing circular economy principles, reducing the quantity of waste and increasing the proportion of recycled materials used on projects.

For an update on the progress already made against these targets, please refer to pages 12-18.

In addition, we are working with our national waste carriers to improve the maturity of our data so we can gain a deeper understanding of where exactly our office and operational waste ends up, what type of waste (if any) is going to landfill and how we can prevent this from happening.

As part of managing our compliance for the Environmental Permits held at our compressor stations, we carry out an appraisal of waste segregation and disposal.

The appraisal is used to identify trends in types of waste, volumes of waste and areas where we can improve or minimise it.

The results of the appraisals are submitted to our environmental regulators for review so they can approve any identified actions.

*Data not shown for 2021/22. As of 2022/23, our suppliers are providing this detail into the Carbon Disclosure platform. This improvement in reporting makes figures non-comparable to previous years.



Our duty as a responsible landowner

National Gas has a significant landholding, with our area of operational and non-operational land totalling 1,174.75 hectares.

Following assessment of all our land in the financial year from 2021 to 2022, we established the total habitat area is 878.16 hectares and we have a baseline of 4,165.61 biodiversity units.

Our EAP includes targets for how we intend to put nature first on our land, for example by:

- Ensuring new construction and demolition projects include initiatives to protect and promote biodiversity
- Setting targets to increase the value of natural assets on non-operational land
- Setting a target in relation to environmental education and outreach on major projects.

For an update on the progress already made against these targets, please refer to pages 12-18.

Environmental incidents

The number and type of environmental incidents reported to the relevant environmental regulatory authority.

Incident date	Location	Brief description	Internal classification	Regulatory classification
January 2023	Alrewas Compressor Station	CO threshold breach	Category 2 permit breach	Incident or permit breach on PPC permit site
January 2023	St Fergus Terminal	Failure of monitoring system	Category 2 permit breach	Incident or permit breach on PPC permit site

Governance and further information



The scope and quality of our data

Scope of data

Here is a summary of some data gaps in our commentary along with an explanation for the omission.

Data gaps identified	Reason for data gap
The change in biodiversity units from network development projects has not been quantified.	No projects have started and finished so far within the RIIO-T2 period that had a temporary or permanent impact on the natural environment.
Percentage of suppliers meeting the licensee's environmental supplier code or equivalent.	Each supplier is legally bound to adhere to our Code of Conduct within our general terms and conditions. We therefore expect all of our suppliers to be meeting the code. We have not yet carried out full assurance against compliance, but plan to do so next year.
The key materials (maximum of ten) by value and/or mass consumed directly by the company and, where relevant, the supply chain. Licensees should comment on the environmental impact of materials where possible.	The volumes of consumed materials are not yet quantified.

Quality of our data

Data relating to our business carbon footprint, waste data and data related to the natural environment have mainly been taken from the data submitted in our RRP.

The validation of the RRP data is assured internally. We consider our governance process for RRP to be consistent and robust.

Furthermore, each EAP target has an accountable manager who reviews and approves the annual performance information.

During preparation of this AER, we have endeavoured to ensure that:

- The reported data is accurate and meaningful
- The reported data reflects our performance in the last financial year (2022/23) and is consistent with the scope of requirements detailed in the Ofgem guidance – RIIO-T2 Environmental Reporting
- The assumptions made regarding our calculation and measurement methods are clear and detailed throughout.

Management review and responsibilities

The main roles are as follows. These are the minimum requirement for assurance purposes and apply to the full AER:

- Data Provider: has an in-depth knowledge of the data and is responsible for providing a complete data set to the Level 1 signatory, as well as providing evidence of the checks performed in support of this.
- Level 1 signatory: is considered an 'expert' in understanding the data and is responsible for identifying and performing accuracy checks on the data set as well as providing evidence to support this and any conclusions made, including identifying errors or anomalies. This role provides data accuracy comfort to the Level 2 signatory.
- Level 2 Senior Manager signatory: is responsible for ensuring the data is consistent with expectations and can be explained in a specific year and across periods of time. This role reviews the evidence in place to support data accuracy checks and conclusions.
- Level 3 Executive Team member: is responsible for overall AER sign off.

Reporting boundaries

This report provides data and information for the period 1 April 2022 to 31 March 2023 across National Gas Transmission.



Get in touch

We need everyone at National Gas Transmission to work together to help us reduce our impact on the environment.

For our most recent AER, visit our external page:
<https://www.nationalgas.com/contact-us/stakeholder-resources>.

If you have questions or suggestions, please email us at [.box.GTSHE.EnvSust@nationalgrid.com](mailto:box.GTSHE.EnvSust@nationalgrid.com).

Get involved

Let us know how you are contributing to our targets. If you are working towards one of our targets and want your work or your team's work to be represented in our future updates, then please get in touch!

Glossary

Term	Acronym	Description
Annual Environmental Report	AER	Report submitted to Ofgem by licensees to ensure they remain accountable on a yearly basis for implementing their RIIO-T2 EAP Commitments.
Best Available Technology	BAT	National Gas has a legal obligation to ensure that all equipment complies with the requirements of Best Available Techniques. This is a stepwise approach (a simple, standardised method for collecting, analysing and disseminating data) following a defined methodology set out by the UK environmental regulators: the Environment Agency (EA); the Scottish Environment Protection Agency (SEPA); and Natural Resources Wales (NRW).
Biodiversity Net Gain	BNG	An approach to development, and/or land management, that aims to leave the natural environment in a measurably better state than it was beforehand.
Calorific Value Shrinkage	CVS	Energy that cannot be billed due to CV capping under application of the Gas (Calculation of Thermal Energy) Regulations 1996 and subsequently amended in 1997.
Carbon Interface Tool	CIT	An internally developed tool to measure the carbon footprint of all schemes. It has been created in alignment with (PAS) 2080 (PAS 2080:2016 Carbon Management in Infrastructure) and will be refreshed to capture changes in the 2022 PAS 2080 revision.
Climate Change Adaption Report		Details our strategy to manage climate related risk.
Compressor Fuel Usage	CFU	Energy used to run compressors to manage pressures within the GT system. This can either be gas or electricity, depending on the power source for the specific compressor.
Environmental Action Plan	EAP	Plan outlining our approach to environmental management and environmental performance during RIIO-T2. The plan was formed from our Business Plan Commitments and consists of specific targets under five pillars, with clear accountabilities and work programmes, that will drive improved environmental performance.
FutureGrid		Part of our HyNTS programme, the project is testing the suitability of the NTS to transport hydrogen by constructing an offline hydrogen test facility, representative of our network, which will be used to test decommissioned assets at a range of different hydrogen concentrations (including 2%, 20% and 100%).
Gas Distribution Networks	GDNs	Transports gas through their pipelines to end users. There are eight GD networks, each of which covers a separate geographical region of GB. Since GDNs are natural monopolies, they are regulated by Ofgem. For GDNs to legally distribute gas, they must hold a Gas Transporter Licence.
HyNTS programme		Hydrogen in the NTS is focused on understanding how we can safely and efficiently transition our network to hydrogen.
ISO 20400		Sustainable sourcing process providing guidance to organisations on integrating sustainability within procurement, as described in ISO 26000.
Methane Emissions Reduction Campaign	MERC	Work programme with Ofgem to implement a plan to reduce methane emissions and increase detection of leaks across the NTS during RIIO-T2.
Methodology Annex Document		Describes the scope and boundaries of our environmental commitments, along with the assumptions made regarding our calculation and measurement methods.
National Gas Services	NGS	Formerly the pipeline maintenance centre. Specialises in gas pipeline repair, replacement, maintenance and intervention to deliver in-field solutions to a range of emergency and planned projects across the gas pipeline network.
Output Delivery Incentives	ODI	Scorecard agreed with Ofgem to encourage us to improve the environment beyond the existing commitments in our EAP.
PAS 2060 and PAS 2080		PAS 2060 is the specification for carbon neutrality. PAS 2080 is the standard for managing carbon in infrastructure.
Project Union		Part of our HyNTS programme, the project will connect, enable net zero, and empower a UK hydrogen economy by developing a circa 2,000km UK hydrogen 'backbone' by the early 2030s.
RIIO Price Control Framework		Revenue = incentives + innovation + outputs. The price control framework for high pressure GT networks which lasts for five years. RIIO-T1 ran from 2013-2021. RIIO-T2 started on 1 April 2021 and runs until 31 March 2026.

Term	Acronym	Description
Science Based Targets initiative	SBTi	The SBTi defines and promotes best practice in science-based target setting. SBTi provide a clearly defined pathway for a business to reduce their greenhouse gas emissions, helping to prevent the worst impacts of climate change and future-proof business growth. Targets are considered 'science-based' if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement – limiting global warming to well-below 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C.
Task Force on Climate-related Financial Disclosure	TCFD	Framework for consistent climate-related financial risk disclosures for use by companies, banks and investors in providing information to stakeholders. Created by The Financial Stability Board to improve and increase reporting of climate-related financial information.
Unaccounted for Gas	UAG	This is gas that is lost, or otherwise not accounted for, delivered to or taken off from the NTS. It is one of the components of NTS shrinkage.

Appendices

You can find these resources and more at <https://www.nationalgas.com>.

Appendix A:
EAP brochure

Appendix B:
Methodology Annex Document
2022/23 (data lake)

Appendix C:
UAGCVS Report May 2023



**National Gas Transmission
& National Gas Metering**

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