Carbon Reduction Plan 2021

Working towards net zero carbon

First UK solar-powered
Park & Ride – Stourton, Leeds

Contents

Introduction

Ian Parish, Interim Managing Director

> "Climate change is the biggest challenge we all face. As a responsible business we are committed to collaborating across industries, with our clients, peers, and deep into our supply chains, to discover and create innovations that will achieve our goals. Only by working together can we achieve carbon emission reductions needed to meet the net zero carbon goals of our UK government, industry and the global populations."

Commitment to achieving net zero

Reducing carbon emissions is at the heart of our company's sustainability strategy. We are committed to halving the carbon impact of our operations by 2030 and achieving net-zero by 2050. Since 2008 we have had a mature and robust carbon measurement and reporting system which has demonsrated substantial reductions year on year. Delivering low carbon solutions not only helps our clients reduce their carbon footprint, it generates cost benefits for them and for our own business, as well as building our brand and reputation, and to achieve our long-term business strategy. It supports our ability to meet Government and legal requirements, such as the Energy Savings and Opportunities Scheme (ESOS), Streamlined Energy and Carbon Reporting (SECR) and the UK's drive to become net zero carbon by 2050.

Proven track record

BAM Nuttall Ltd has been instrumental in supporting Royal BAM Group's continued CDP 'A list' status having achieved a **40% reduction in CO_2 emissions from 2015 to 2020**. Royal BAM Group participates in CDP climate program each year, and has achieved a place in the leadership index (the 'A list') for the last five years. Royal BAM has an ongoing strategic target to rank among the leading companies globally. Their CDP response is here.

In addition, in 2021 BAM's UK operating companies, BAM Nuttall and BAM Construct, achieved the **Carbon Emissions Measurement And Reduction Scheme's (CEMARS) Platinum Award** for ongoing carbon reductions of more than 60% in 2020 compared to 2008 levels.

Further to BAM's net zero carbon target, carbon reduction targets were evidenced with the Science Based Targets Initiative in 2019, and is one of the first companies in the construction sector to do so. Our reduction pathway is in line with the 1.5°C scenario and demonstrates our carbon reduction efforts are sufficient to meet this key objective. Details of BAM's Science Based Targets are here.

CDP DISCLOSURE INSIGHT ACTION A LIST 2020 CLIMATE

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Our carbon expertise

BAM Nuttall has a long-established environmental and sustainability culture and has established a dedicated function for managing carbon. Our Carbon Reduction Lead, **Sarah Jolliffe** manages the company's interests which impact our ambitions to decarbonise the organisation:

"Climate change is the greatest existential threat we face and industries such as ours have a huge role to play to mitigate our own emissions, and influence carbon reduction throughout the built environment. I'm proud to be at the forefront of driving real change and setting an example in one of the most sustainable construction companies in the UK."

Sarah Jolliffe, Carbon Reduction Lead

In addition, BAM Nuttall's carbon data analyst makes sure our carbon data is robust and complete. Securing highly granular and high-quality data gives us a thorough understanding of our carbon impact and identify the source of key emissions. This influences where we deploy focused carbon reduction measures across areas of our business and achieve the greatest impact. Across the business, every employee, and many of our sub-contractors, has carbon literacy training. Nominated individuals on each project are responsible for carbon and sustainability matters.

Baseline Emissions Footprint

(incorporating current emissions reporting)

BAM Nuttall has measured its direct carbon emissions since 2008 and, since then, has developed comprehensive and efficient ways of handling the data, and presenting it back to stakeholders. Our direct emissions inventory includes all GHG scope 1 & 2 defined emissions and additionally includes carbon arising from select scope 3 emissions associated with:

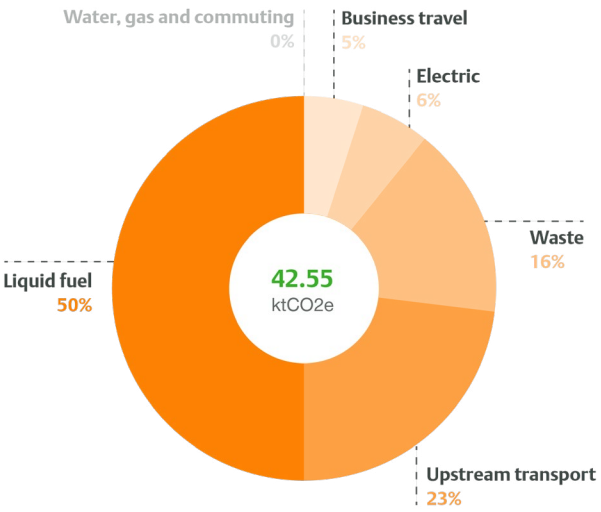
- Employees transported in non-company owned vehicles
- Water use
- Waste arising from our operations
- Transport of goods and services.

We selected 2015 as our baseline year, in line with that of our parent company to provide a robust basis for emissions accounting.
Downstream transportation of goods and services is not applicable to our business as we are an end user only.

Current emissions reporting and comparison to baseline

Emissions scope	2015 baseline emissions $ktCO_2e$	2020 emissions $ktCO_2e$	Reduction from baseline
Scope 1	39.35	23.06	**-41%**
Scope 2	4.52	2.26	**-50%**
Scope 3	23.96	17.23	**-28%**
Total emissions	**67.83**	**42.55**	**-37%**

Emissions split by emissions sources in 2020



Liquid fuels (primarily Gas Oil) are by far the largest contributor to BAM Nuttall's emissions making up around half of the total. While emissions from liquid fuels are high and are a focus of our management and reduction plan, the bulk of these are dictated by the type of civil engineering projects being undertaken at any given time. As a result, we separate emissions related to 'general civils' and 'heavy civils', with the latter being defined as projects with total excavation activities exceeding 500,000 tonnes over their duration. This helps identify underlying emissions trends that are hidden when analysing total emissions combined. Large earth-moving projects tend to have a carbon footprint more than double that of the 'general civils' activities. Emissions from the other elements are all significant although tend to be more consistent each year.

Emissions sources data collection and calculation rationale

Emissions inventory item	Unit of measure	Carbon conversion factor source	Primary data source	Data type	Scope	Comments
Liquid fuels; Gas Oil, HVO, Diesel, Petrol, LPG	Litres	DEFRA	Supplier transaction reports	Measured	1	Liquid fuels are supplied via BAM Nuttall's preferred suppliers from which we receive transaction reports on a monthly fuel purchased basis by third parties which is not included.
Waste	Tonnes	Carbon Trust bespoke conversion factors	Project level submissions via application	Measured	3	Waste transactions are captured at site level where data is entered onto an in-house developed measurement tool.
Electricity	kWh	DEFRA	Energy supplier transaction reports	Measured	2	Electricity data is obtained from our electricity providers' energy reports on a monthly basis. Energy provided by third parties is captured at project level and submitted via our in-house measurement tool. Indirect emissions from transmission and distribution are included in the Scope 3 component of our inventory.
Transport of employees in company vehicles	Miles	Based on actual vehicle CO_2 emissions	Company expense returns	Measured	1	Transport of employees in company vehicles is captured via the central expenses reporting system. The carbon emissions are calculated based on the total distance travelled multiplied by the average carbon emission factors of our fleet vehicles as given by the DVLA.
Transport for employees in private vehicles – Grey Fleet	Miles	Based on actual vehicle CO_2 emissions	Company expense returns	Measured	3	Transport for employees in private vehicles is captured via the central expenses reporting system. The carbon emissions are calculated based on the total distance travelled multiplied by the average carbon emission factors of privately owned vehicles as given by the DVLA.

Emissions inventory item	Unit of measure	Carbon conversion factor source	Primary data source	Data type	Scope	Comments
Employees transport via air and rail	Miles	DEFRA	Company travel providers database	Measured	3	BAM Nuttall's travel provider collects all data from employees where using rail or air travel. Reports are collected every month with additional data coming from our expenses system.
Upstream transport of purchased goods and services	T.KM	DEFRA	Supplier transaction reports and procurement records	Calculated	3	Upstream transport of goods and services is estimated by applying average haul distances to existing procurement data and supplier transaction reports to determine a total haulage distance from which carbon emissions can be calculated.

Data capture and carbon calculation

Carbon data management is complex with emissions originating from a large number of sources, activities and processes. The table above describes our approach and scope for each emissions inventory item.

Wherever possible, we collect activity data at its most granular, often from transaction level goods and services reports, to ensure we are using the best quality and most accurate sources of data. Where we are unable to obtain data autonomously, nominated individuals complete data returns via our in-house developed measurement tool, BAMSite. The tool creates a seamless digital interface in which users can enter their data whenever activities take place, with the data automatically sent to the central database.

When we work in joint venture, we report the equity share of carbon emissions as per the commercial terms for each main contractor within the joint venture.

The application of carbon data is made in line with the most reliable and robust emissions factors or each inventory item. Primarily, we use the DEFRA carbon emissions conversion tables, published and updated annually. For emissions associated with waste arisings, we use a bespoke set of conversion factors provided by the Carbon Trust which are deemed the most accurate for our business. Similarly, for employees' transport in road vehicles, we collect data on the specific vehicle types and are therefore able to calculate accurate emissions arising from this source.

Carbon data assurance

Our carbon data is externally verified twice annually at corporate level, in line with ISO14064 under the CEMARS scheme and the GHG protocol as part of our parent companies annual integrated reporting. Both our auditors, Ernst & Young and Achillies, have praised our approach to carbon management and ensures that our carbon data is of high quality. At project level, we undertake detailed carbon audits which support our compliance with ESOS legislation and gives our projects targeted guidance on how they can reduce carbon specific to their situation.

Emissions reduction targets

BAM Nuttall is committed to halving carbon emissions by 2030 and achieving net zero carbon by the end 2050 from activities arising from its own operations inclusive of all energy and employee transport used to deliver our projects. Underneath this overarching objective, we have several targets which are listed below: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Carbon Reduce Certification
BAM Group (UK) Limited

Schedule of carbon reduction targets

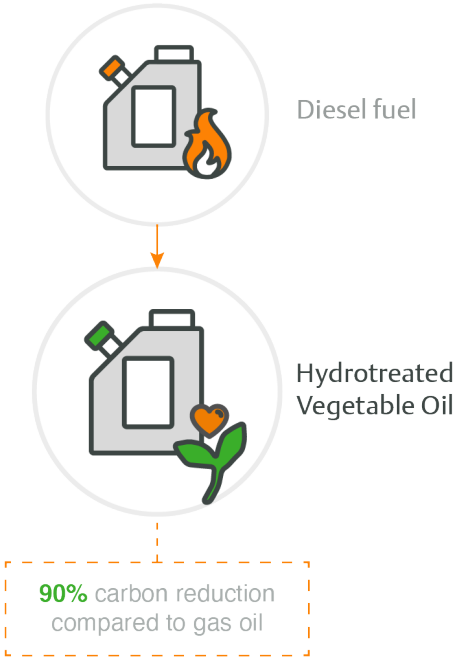
Carbon reduction target	
Reduce scope 1, 2 & selected scope 3 GHG emissions intensity by 50% by 2030	We **reduced** our overall CO_2 emissions intensity by **37%** compared to 2015 levels.
Reduce GHG emissions intensity from staff transport by 30% by 2030	Employee transport was **60% lower** than 2015 levels with the most significant reductions seen in air and rail travel due to COVID-19 restrictions. We estimate that around 15% of the overall reduction in travel emissions is attributed to improvements in vehicle efficiency and reduced mileage.
Reduce GHG emissions intensity from liquid fuel use on 'heavy civils' projects by 20% by 2030	The carbon intensity of projects in this category have **reduced by 35%** in 2020. We estimate that 15% of the reduction in this measure is attributed to efficiency gains associated with newer plant and the use of hybrid / electric power supply options.
Reduce GHG emissions intensity from premises by 20% by 2030	Offices both leased and owned are included in this target and we have seen a **45% reduction** in GHG emissions from these entities. This is as a result of reducing numbers of fixed premises since 2015 and further reductions from partial office closures in 2020 due to COVID-19 restrictions.
Reduce GHG emissions intensity from liquid fuel use on 'general civils' projects by 50% by 2030	The carbon intensity of projects in this category have **reduced by 40%** in 2020 due to efficiency gains associated with newer plant and the use of hybrid / electric power supply options. COVID-19 restrictions are not deemed to have materially affected reduction efforts on these schemes since the majority of works continued throughout the year.
Achieve 75% reduction in emissions intensity per £Million revenue for scope 1, 2 & selected scope 3 GHG emissions by 2030	Target newly listed in 2020 reflective of our ambition to be a **net zero carbon business** in its operations.
Reduce the GHG emissions from the transport of goods and services by 20% by 2030	Target newly listed in 2020 reflective of the requirements of PPN06/21 to include this item in our carbon reduction plan. We apply a calculation to our measured purchased goods and services data to determine the total mileage and subsequent carbon emissions arising from this emissions source.

Progress against our net zero strategy

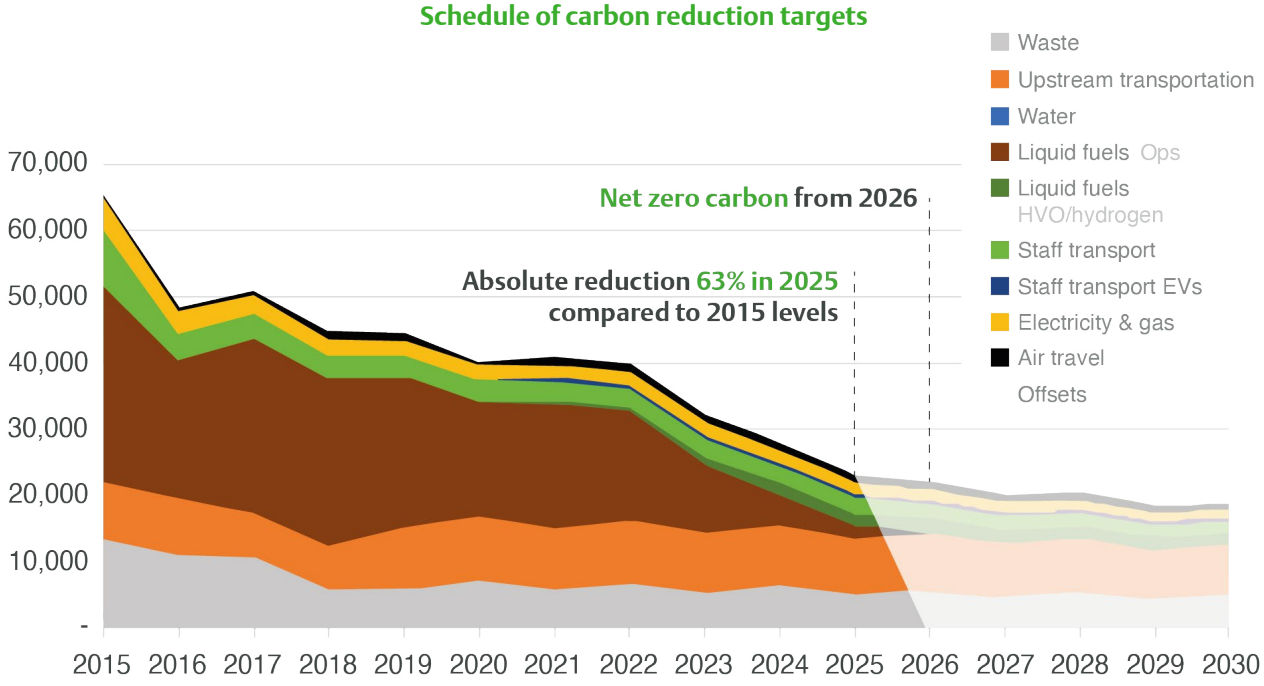
Our net zero decarbonisation pathway below illustrates how we plan to reduce emissions – ultimately towards net zero carbon by the end of 2025. The pathway shows we are currently ahead of the target for 75% carbon intensity reduction by 2025 compared to 2015 levels with the remaining emissions reductions to be achieved through credible carbon offsetting measures. In the next five years we expect to achieve an absolute emissions reduction of 17,051tCO_2e from 2020 levels – a reduction of 42%.

2020 saw significant reductions in transport emissions and is partially attributed to the effects of the COVID-19 pandemic. But mostly the reduction we have achieved is attributable to ongoing carbon reduction actions detailed in this report. Additionally, our work mix in 2020 involved slightly reduced 'bulk earthworks' projects than in a typical year which led to reduced liquid fuel use in the 'heavy civils' category.

Moving forward, we are confident our emissions will continue to fall sharply due to the substantial increase in remote working, electric vehicle transition and the introduction of Hydrotreated Vegetable Oil (HVO) fuel which replaces fossil derived diesel fuels and has in excess of a 90% carbon reduction compared to gas oil.



Schedule of carbon reduction targets



Carbon reduction projects

We have taken consistent action to decarbonise our activities over the past decade and always strive to deliver work using low carbon solutions. Each intervention we make to reduce carbon is captured. In 2020, we documented over 100 specific actions **leading to an absolute carbon reduction of approximately 6,000tCO2e – a 9% reduction from our baseline year 2015**. The following are examples that made a significant contribution to our carbon reduction efforts in 2020.

Hybrid plant

Earthworks is a common activity to many civil infrastructure projects and by virtue of this the carbon impact is high. Large excavators are commonly employed to undertake this activity and can use upwards of 25 litres of diesel per hour. In 2020, we trialled the use of hybrid excavators on several projects which incorporate a combined battery and kinetic energy recovery system resulting in fuel savings. Across the trials **we achieved a carbon reduction of 27.58tCO2e over 25 weeks** and we plan to roll out the use of these on future projects.

-27.58 tCO2e
over 25 weeks

22t Hybrid excavator in action at the M8 footbridge scheme

Grid and off-grid powered welfare

Each project requires varying levels of welfare facilities and office space to provide safe places for people to rest, eat, wash, store equipment and work from. The aim on every project is to power these temporary buildings with grid electricity, avoiding the use of diesel generators. In 2020, we mitigated the use of at least 10no 60kVa generators yielding a **carbon reduction of approximately 1,800tCO2e**.

Where grid connections are not practical, we turn to off-grid alternatives such as solar, battery storage and even hydrogen to deliver low or zero carbon power solutions. In 2020, the use of these alternatives **mitigated a further circa 1,200tCO2e**. Combined, our efforts to reduce carbon arising from the provision of power supplies have resulted in a reduction of approximately 3,000tCO2e and represents **the bulk of our emissions reductions** in 2020.

Ecosmart Zero welfare unit powered by Hydrogen fuel cells and solar pv in use on our M62 highways scheme

Electric vehicle transition

In 2020, BAM Nuttall made changes to its company car policy so **all eligible employees have access to an all-electric vehicle**. Since the introduction of the policy, over 30 EVs were brought into the company displacing fossil fuel powered equivalents. This has resulted in a carbon reduction of 6tCO2e with reductions expected to accelerate quickly in 2021 and beyond.

BAM Nuttall has recently become a **certified installer of EV charging points** and is rapidly working to provide facilities for EV users to recharge at every project site and office location. The company also supports employees opting for an EV with a financial subsidy to install charge points at their home.

Electric vehicles in use at our flood defence project in Leeds

Future projects

Moving forward we expect to deliver more carbon emission reductions through ongoing efforts to remove fossil-based liquid fuels from our business and strive for greater operational efficiency. But increasingly we are focusing on emissions arising from our indirect emissions sources – particularly from bulk materials such as concrete, steel, asphalt and aggregate. BAM has been heavily involved in the development of 3D printed concrete over the past few years and has taken the opportunity to utilise it on some projects for applications such as access stairs and culvert head walls. 3D printed concrete delivers significant volume reduction resulting in as much as **40% reduced concrete** use and is something we expect to use more of in the future. Low carbon and ultra-low carbon concretes are also of key interest to the business and we have begun to use significant volumes. The Dawlish Sea Wall project in Devon plans to pour 8,500m3 of ultra-low carbon concrete delivering a carbon saving of 1,062tCO_2e.

Finally, we are at the forefront of delivering more sustainable and low carbon solutions for our customers. An example is the first solar-powered Park and Ride in Stourton, Leeds, that incorporates a 1.2MW solar PV system, to mitigate 471tCO_2e annually.

Ultra low-carbon concrete being placed at the Dawlish sea wall project

Declaration

This Carbon Reduction Plan has been completed in accordance with PPN 06/21 and associated guidance and reporting standard for Carbon Reduction Plans.

Emissions have been reported and recorded in accordance with the published reporting standard for Carbon Reduction Plans and the GHG Reporting Protocol corporate standard and uses the appropriate Government emission conversion factors for greenhouse gas company reporting.

Scope 1 and Scope 2 emissions have been reported in accordance with SECR requirements, and the required subset of Scope 3 emissions have been reported in accordance with the published reporting standard for Carbon Reduction Plans and the Corporate Value Chain (Scope 3) Standard.

This Carbon Reduction Plan has been reviewed and signed off by the board of directors at BAM Nuttall and will be reviewed annually.

Signed on behalf of BAM Nuttall Ltd:

Ian Parish

20 September 2021