Carbon Reduction Plan 2024

Supplier name: Mace Ltd

Publication date: May 2024

COMMITMENT TO ACHIEVING NET ZERO

Mace Group achieved Carbon Neutrality in 2020 and to reduce our future reliance on offsets will reduce absolute emissions by 10% year on year (47% overall reduction) by 2026.

Baseline Emissions Footprint

Baseline emissions are a record of the greenhouse gases that have been produced in the past and were produced prior to the introduction of any strategies to reduce emissions. Baseline emissions are the reference point against which emissions reduction can be measured. The 2020 baseline was prepared in line with the definitions outlined in the Mace Basis of Carbon Reporting in our Statement for Year ending 31st December 2020.

Baseline year: 2020

Additional Details relating to the Baseline Emissions calculations

Mace's carbon footprint adheres to the Greenhouse Gas Protocol's Corporate Accounting and Reporting Standard. Our 2023 carbon reporting and measurements have been verified by independent auditors, Carbon Footprint.

Scope and Reporting Boundaries

Mace works across the whole built environment life cycle and has two business engines: Consult and Construct. Since 2020, Mace has consolidated from four engines (Consult, Construct, Develop and Operate) to three where Develop is now included in part of Consult. From November 2023 Operate has split from Mace, becoming a new company and from that point has not been included in reporting.

Our full reporting scope includes all Scope 1 and 2 emissions from Mace offices and construction sites within our operational control. We also report on a number of Scope 3 emissions categories which have the most material impact.

The Mace 2020 baseline was calculated in line with the Greenhouse Gas Protocol control approach for Operational Control (a company has operational control if it or one of its subsidiaries has the full authority to introduce and implement its operating policies at the property).

How we determine operational control:

- All construction projects are deemed to be within our operational control. Every Mace construction project must be logged on our online reporting platform **Optimise**[1] as part of the **'Engage'**[2] process. The Optimise central listing provides a list of all construction sites that are eligible for reporting.

[1] Optimise is the Mace KPI monitoring tool - it shows a project's performance against our corporate environmental and responsible business targets

[2] Engage is our ISO 9001 certified management system which holds our mandatory policies, procedures and guidance

- All Mace offices where we lease/own space and where we have operational control of the electricity supply are included in our reporting. A central list of these offices is maintained by the Mace Executive Board.

Where Mace has operational control, the calculation methods are detailed below. Mace does not currently quantify:

- Upstream Scope 3 transportation (datasets are not currently available).
- Downstream Scope 3 transportation and distribution of sold products (we do not produce goods/services for transportation downstream).

The following table is an excerpt from the published **Mace Basis of Carbon Reporting 2023**:

Emission	Scope	Method and Data Source
Scope 1		
Diesel Data unit is litres	Diesel fuel consumed on all our construction sites including those sites run under our Consult business where Mace acts as a Main Contractor or Construction Manager.	Data collected via Optimise where site teams upload diesel deliv-ery notes. Where data was not available, estimates were made using aver-aged diesel consumption data from other Mace construction sites as outlined in the estimations and assumptions section. A majority of our construction activities, and therefore diesel con-sumption, occurs in the UK. The carbon factors used to convert diesel consumption into emissions are sourced from DEFRA 2023 GHG Emissions Factors using the 'Diesel (average biofuel blend)' category.
HVO Fuel Hydrotreated Vegetable Oil Data unit is litres	HVO fuel consumed on all our construction sites including those sites run under our Consult business where Mace acts as a Main Contractor or Construction Manager	Data collected via Optimise where site teams upload HVO fuel de-livery notes. It is assumed that all HVO fuel has been included in the data pro-vided on Optimise therefore no estimates were made to fill gaps. A majority of our construction activities, and therefore HVO fuel consumption, are UK-based. The carbon factors used to convert HVO consumption into emissions are sourced from DEFRA 2023 GHG Emissions Factors using the 'Biodiesel HVO' category.
Petrol Data unit is litres	Petrol fuel consumed on all our construction sites including those sites run under our Consult business where Mace acts as Main Contractor or Construction Manager.	Data has been collected via Optimise where site teams upload petrol delivery notes. It is assumed that all petrol has been included in the data provided on Optimise therefore no estimates were made to fill gaps. As a majority of our construction activities, and therefore petrol consumption, occurs in the UK, the carbon factors used to convert petrol consumption into emissions are sourced from DEFRA 2023 GHG Emissions Factors using the 'Petrol (100% Mineral)' category.
LPG Data unit is litres	LPG consumed on all our construction sites including those sites run under our consultancy business where Mace acts as a Main Contractor or Construction Manager.	Data has been collected via Optimise where site teams upload LPG delivery notes. It is assumed that all LPG has been included in the data provided on Optimise therefore no estimates were made to fill gaps. As a majority of our construction activities, and therefore LPG consumption, occurs in the UK the carbon factors used to convert LPG consumption into emissions are sourced from DEFRA 2023 GHG Emissions Factors using the 'Gas (LPG)' category.

Emission	Scope	Method and Data Source
Natural Gas Data unit is m^3	Purchased natural gas on our construction sites including those sites run under our consultancy business where Mace acts as a Main Contractor or Construction Manager. Natural gas consumed by Mace offices under our operational control.	Data has been collected through two methods: • Billed natural gas consumption (Mace Energy Hub online platform) where natural gas is consumed in our offices. • Meter reading data uploaded on Optimise for construction projects where natural gas is consumed. Where data for offices or construction sites was not available estimates were made using averaged data from other Mace offices, construction sites and/or industry standards as outlined in the estimations and assumptions section. A majority of our natural gas consumption occurs within our UK offices and construction sites. The carbon factors used to convert gas consumption into emissions are sourced from DEFRA 2023 GHG Emissions Factors using the 'Gas (Natural Gas)' category.
Refrigerants Data unit is kg	Refrigerant disposal and leakage from air conditioning systems.	Not currently quantified.
Scope 2		
District heating	Purchased heat from district heating systems	This category has been excluded as Mace does not purchase heat from district heating systems.
Electricity Data unit is kWh	Emissions associated with the electricity consumed on our construction sites. Emissions associated with the electricity consumed on our construction sites run under the consultancy banner where Mace acts as a Construction Manager. Electricity consumed by offices under our operational control.	Data has been collected through the following methods: • Automatic data collection from half-hourly meters on the Stark reporting platform (covering Mace's purchased electricity contracts in the UK). • Meter reading data uploaded on Optimise for construction projects where electricity is not procured by Mace (covering our remaining global construction sites) • Office Managers providing meter readings or utilities bills covering our international offices' electricity consumption. • Data received through billed consumption (Mace Energy Hub online). Where data was not available estimates were made using bench-mark data from other Mace offices or construction sites as outlined in the estimations and assumptions section. Carbon emissions associated with electricity consumption have been calculated as both market-based and location-based emissions. Carbon factors used to convert electricity consumption into emissions are sourced from: Location based factors: • DEFRA 2023 GHG Emissions Factors used for UK emissions. • IEA 2023 (total CO_2 emissions per kWh). • Where country specific conversion factors are available these have been used. Where a country specific factor is not available a global average has been used based on whether a country is a member of the OECD. Market based factors have been calculated using the market-based method emission factor hierarchy set out in the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. Where green or renewable energy has been procured, supplier specific market-based carbon emission factors are used.

Emission	Scope	Method and Data Source
Electricity Cont'd		For this baseline the following have been used: • DEFRA 2023 GHG Emissions Factors used for UK emissions. • IEA 2023 (total CO_2 emissions per kWh). Where country specific conversion factors are available these have been used. Where a country specific factor is not available a global aver-age has been used based on whether a country is a member of the OECD. • AIB European Residual Mix (RE-DISS) of 2022. • EAC certificates.
Scope 3		
1. Purchased goods and services Data unit is m^3	Water consumed on all our construction sites including those sites run under our consultancy business where Mace acts as a Main Contractor or Construction Manager.	Data collected through the following methods: • Meter reading data uploaded on Optimise Where water consumption data was not available estimates were made using averaged data from other Mace construction sites as outlined in the estimations and assumptions section. Carbon emissions associated with water consumption have been calculated using the 2023 DEFRA GHG Emissions Factors carbon factor category 'water supply'.
2. Capital goods Data unit is GBP (£)	Embodied carbon associated with the materials used on our Mace Development projects.	Carbon factors are calculated using detailed material specifications and quantities, using OneClick LCA as a calculation tool which sources material carbon factors from the ICE v3 Database for Embodied Carbon Factors and product specific Environmental Product Declarations (EPDs). These embodied carbon factors used to calculate the total tCO_2e of embodied carbon for Mace Developments. No development projects were completed during 2023.
3. Fuel and energy related activities Data unit is kWh	T&D losses associated with global electricity consumption.	T&D losses are calculated using the Scope 2 reporting electricity consumption data. Carbon emissions associated with T&D losses are calculated using the IEA 2023 Emissions Factors (T&D Losses) globally and using DEFRA 2023 GHG Emissions Factors.
4. Upstream transportation	N/A	Not Applicable.
5. Waste Data unit is tonnes	Waste consumed on all our construction sites including those sites run under our consultancy business where Mace acts as a Main Contractor or Construction Manager.	Data collected through the following methods: • Waste transfer notes uploaded on Optimise. • Diversion from landfill reports provided by waste destinations. Where waste to landfill data was not available estimates were made using averaged data from other Mace sites. Carbon emissions associated with waste generation are calculated using DEFRA 2023 GHG Emissions Factors carbon factor category 'waste'.

Emission	Scope	Method and Data Source
6. Business travel Data unit is kilometres (and spend where kilometres is not available)	Emissions associated with business travel across the group.	Data collected through: • Mace's travel provider FCM. • Mace's expenses team. • Addison Lee (UK taxi service provider). • Emails summarising travel from the finance leads across international offices where FCM is not used. Emissions associated with a majority of business travel are calcu-lated using DEFRA 2023 GHG Conversion Factors and a kilometre travelled conversion factor. For a small number of international businesses, travel movements and kilometres travelled is not available. In these cases, a spend proxy is used. The spend proxy is based on the tCO_2e per km travelled for each mode of transport where both km and spend data are available. This is based on 2023 data.
7. Employee commuting	Emissions associated with working from home.	Working from home calculations include emissions associated with equipment, heating and cooling of home office space using the methodology set out in the Eco Act Home Working Emissions white paper (2020). Emissions associated with employee commuting are calculated using DEFEA 2023 GHG Conversion Factors and IEA 2023 Emis-sions Factors.
8. Upstream leased assets	N/A	None reported. Emissions associated with international offices which are leased are reported under Scopes 1 and 2.
9. Downstream transportation and distribution of sold products	N/A	Not quantified. Mace's primary products for sale are buildings and consultancy services. The GHG impact of transport and distribution of these services is considered de minimis and has been excluded.
10. Processing of sold products	N/A (Operate & Consult) Not Quantified (Develop & Construct)	Not quantified. Mace's primary products for sale are buildings and consultancy services. The GHG impact of processing of these services is considered de minimis and has been excluded on grounds of data unavailability.
11. Use of sold products	N/A (Operate & Consult) Not Quantified (Develop & Construct)	Not quantified. Mace's primary products for sale are buildings and consultancy services. The GHG impact of using of these services has not yet been quantified.
12. End-of-life treatment of sold products	N/A (Operate & Consult) Not Quantified (Develop & Construct)	Not quantified. Mace's primary products for sale are buildings and consultancy services. The GHG impact of end-of-life treatment of these products and services has not yet been quantified.
13. Downstream leased assets	N/A	Not applicable, Mace do not lease any offices to clients or other organisations.
14. Franchises	N/A	Not applicable, Mace do not have any franchises.
15. Investments	N/A	Not applicable to Mace.

Baseline emissions reporting

Reporting year: Jan – Dec 2020

Emissions	Total (tCO_2e)
Scope 1	4,372.90
Scope 2	565.89 (Market based) 6,611.57 (Location based)
Scope 3 (Included Sources)	9,494.83 **Waste to landfill:** 0.42 (category 5) **T&D Losses:** 549.03 (category 3) **Water consumption:** 39.35 (category 1) **Business Travel:** 3,657.04 (category 6) **Embodied Carbon:** 2,794.00 (category 2) **Working from Home:** 2,500.00 (category 7)
Total Emissions	14,433.63
Total Offsets	14,434
Net Emissions	0

Current Emissions Reporting

Reporting year: Jan – Dec 2023

Emissions	Total (tCO_2e)
Scope 1	2,200.78
Scope 2	858.16 (Market based) 4,416.81 (Location based)
Scope 3 (Included Sources)	7,699.24 **Waste to landfill:** 1.23 (category 5) **T&D Losses:** 316.81 (category 3) **Water consumption:** 17.02 (category 1) **Business Travel:** 5,070.19 (category 6) **Embodied Carbon:** 0 (category 2) **Working from Home:** 2,294.00 (category 7)
Total Emissions	10,758.18
Total Offsets	10,759
Net Emissions	0

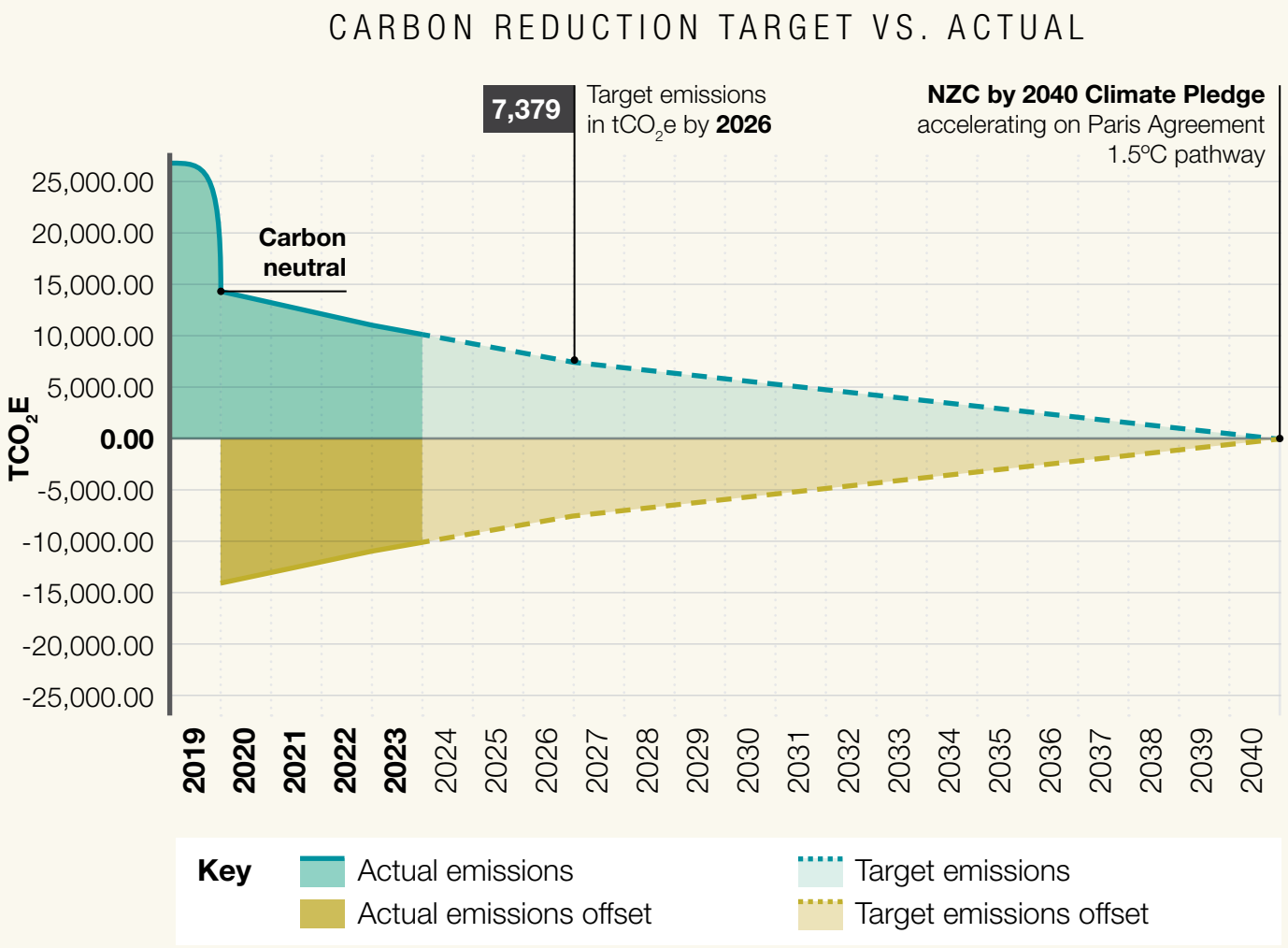
Emissions reduction targets

To continue our progress to achieving Net Zero, we have adopted a programme of carbon reduction activities and targets.

Mace GHG emission targets

The Mace Steps Without Footprints strategy released in January 2020 included a commitment to achieve carbon neutral (using offsets) by end of 2020 (reporting based on our operational control). This was met in 2020 and is now an ongoing commitment. In our 2026 Business Strategy we committed to a refreshed target to reduce absolute carbon emissions by 10% year on year from 2021-2026, against 2020 data. This represents a decrease to **7,379** tCO_2e by **2026** (a 47% reduction overall).

Progress against our targets can be seen in the graph below:



Carbon Reduction Projects

Completed Carbon Reduction Initiatives

The following carbon reduction measures and projects have been completed or implemented since the 2020 baseline was developed and contributed to our reduction in GHG emissions of 5.9% from the previous year (2022).

Waste and water

In scope: the water we use and waste we send to landfill.

Through a re-invigorated waste and circular economy working group, Mace leaders have committed to driving change through pre-defined plans. In addition, our plastics working group continues to push our 'Time to Act' campaign with a focus on further supply chain collaboration and training.

Our ambitious target of 100% waste diversion from landfill saw us achieve 99.64% in 2023. In 2023, we strengthened our partnership with the social enterprise Community Wood Recycling. By working with them on our construction projects, we diverted 141.1 tonnes of waste timber to other uses, saving 70 tonnes of carbon emissions.

At a University campus project in East London, we worked with our supplier, Protec, by utilising a takeback scheme for temporary protection and we were able to recover 9.06 tonnes of used sheets. This diverted 48.02 m^3 from standard waste streams and provided an atmospheric carbon saving of 31.71 tCO_2e. It would take the equivalent of 1,586 mature trees growing for a year to offset the same amount of CO_2. This take back scheme is now implemented on many of our projects and is a requirement in all new contracts.


University campus project

Diesel generator ban

In April 2021, Mace introduced a diesel generator ban. The new policy has made it much more onerous for project teams to get approval for the use of diesel generators and was introduced to encourage the uptake of alternative solutions.

The new process is that a generator checklist is issued on a 'request only basis' and must be formally signed off by the Sustainability Lead and Project Director / Business Unit Lead. The use of a generator will only be approved if there is a clear-cut reason why the project cannot utilise mains electricity.

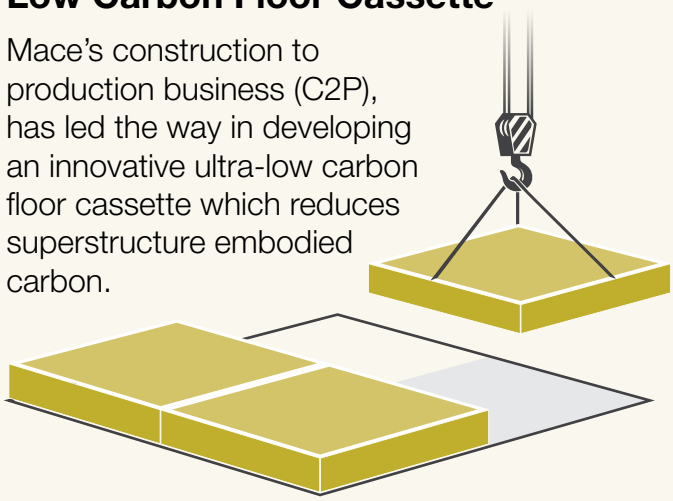
Where a generator must be used, the Sustainability Lead(s) provide guidance on the type of gen-set, fuel type, etc., and in the interest of the Mace Net Zero Carbon commitment, look to have the project use a hybrid set. Mace's Net Zero innovation group have collated a database of acceptable alternatives and options for projects to utilise.

Use of hydrotreated vegetable oil (HVO) fuels

From June 2022, our contracts formally stated diesel-use on site is by exception only. Uptake of HVO has therefore been increasing across our construction sites. In 2023, 1,239,500 litres of HVO sustainable biofuel were used across Mace construction sites. If diesel had been used in its place, this would have led to an increase in emissions of 3,113.7 tCO_2e. Note this does not account for biogenic carbon emissions associated with HVO.

Low Carbon Floor Cassette

Mace's construction to production business (C2P), has led the way in developing an innovative ultra-low carbon floor cassette which reduces superstructure embodied carbon.



The system is currently being utilised within our Palmerston Court scheme, resulting in 40% fewer delivers to site, up to 25% reduction in structural frame dead load and 55% reduction in carbon footprint.

Low Carbon Steel

For all steel frame schemes, we offer a low carbon solution, in line with our SteelZero commitment. The process starts with a detailed review of steel volumes, followed by an assessment of supply options to maximise the supply from low carbon Electric Furnaces (EAF) utilising a high proportion of recycled materials. This lowers the embodied carbon and supports the circular economy. The steel frame scheme currently in construction at one of our Commercial Office projects in the City of London is predicted to give a 41% reduction in carbon compared to traditional steel.

EP100

We have made great progress in moving the business over to renewable energy sources, but we also recognise that we have a commercial and moral responsibility to manage our energy demand. Going forward, the pressure on the UK's electrical energy generation infrastructure will increase and we have an obligation to proportion the finite renewable element fairly.

As a result, Mace Construct are the first tier 1 contractor to sign up to EP100, a challenging commitment to double our energy productivity within the next 25 years. We are working to build the same for half the energy consumed in 25 years. This will be achieved via off-site manufacture (C2P), the reduction in liquid fuels (including diesel replacements), right first-time quality and energy efficient plant and method of work.

UK Government department

Since 2020 we have managed the delivery of a major solar farm and electric vehicle charging point programme for a UK Government department. Over the course of three years, we managed installation of 6 ground mounted and 45 roof mounted solar arrays, and 250 electric vehicle charging points across 56 sites enabling a move to electric fleet vehicles. The solar panel interventions will save 5,000 tonnes of carbon emissions over their lifespan (25 years) and generate 42 GWh of energy.

London Developer

We are working collaboratively with a London Developer and their design team to help deliver substantial embodied carbon savings in two new buildings. Key carbon savings identified to date include:

- Increased cement replacement content in concrete mixes.
- Use of low-carbon Celsa reinforcement.
- Use of low-carbon Hydro Reduxa aluminium sections for the façade.
- Increasing the amount of low-carbon structural steel, in line with our SteelZero commitment.
- Specifying low-carbon or reused raised access floors.

Calculations show that we are on track to achieve significant carbon savings (over 7,000 tCO_2e).

Future Carbon Reduction Initiatives

In the future we will deliver further outcomes and measures such as:

Reduction of our clients' carbon by ten million tonnes

Mace's scope of influence is significant. As a global business, providing property and infrastructure to communities, we have a responsibility to lead sustainable construction from the front, be a voice for change and share our knowledge to help our clients realise and achieve their ambitions.

By looking at whole life-cycle carbon (WLC) emissions, which result from the construction and use of a building over its entire life, including its demolition and disposal, we have been able to build a true picture of a building's carbon impact on the environment and identify where the industry generates the highest amount of carbon emissions.

Between 2021 and 2026 we have committed to reduce our global clients' carbon by ten million tonnes through transformational change programmes that look at education, behaviours, procurement, and the latest innovations. This target dramatically builds on the carbon reduction programmes we are currently delivering for clients across the world.

London Developer

Mace has been appointed to deliver an eight-storey building in London which will provide Grade A office space, as well as retail spaces, a gym and outdoor terraces. Embracing a pioneering circular approach in the UK, the project will be reusing over 700 tonnes of reclaimed steel from another demolition project in the City of London. The structural steel columns and beams identified as suitable for reuse were deconstructed to maintain the maximum usable length of material. Once removed from site, the steel will be tested, processed, re-certified and stored in appropriate conditions in the UK. Comparing the carbon values of re-used and primary steel showed emissions of the re-used steel is reduced by 99% before prefabrication.

London Developer

Mace has been appointed on a corporate head office with plans to repurpose and transform a 1980s office block. The project has been planned in accordance with the principles of a 'Circular Economy'; aiming to conserve resources, increase efficiency and source sustainably. Key carbon savings identified to date include:

- Reusing 76% of the existing structure saving 295 tCO_2e on the substructure.
- Reusing existing façade stone saving 90 tCO_2e.
- Reducing steelwork in floor infills saving 1,000 tCO_2e.

Education is key

Our people are the driving force behind such bold ambitions, but the world of climate change is complex, and our success will depend on our people really understanding the breadth of opportunity and feeling empowered to lead the way. We want our leaders to be courageous disruptors for our industry. And we want our entire workforce to be part of the transformation. Over the next year we will be upskilling our entire workforce on the importance of pursuing a sustainable world and how everyone at Mace can support our ambitions.

Another aspect of our responsibility is to provide opportunities for people to get involved and have their voices heard, especially where working from home is considered. None of what we want to achieve is going to be possible without the support of our supply chain, designers and clients. The Mace Business School will play a significant role over the next few years in creating a platform for greater support and collaboration.

Climate change remains the number one priority and the number one opportunity to bring our industry together as we all strive to create better places for people to live, work and play sustainably.

Declaration and Sign Off

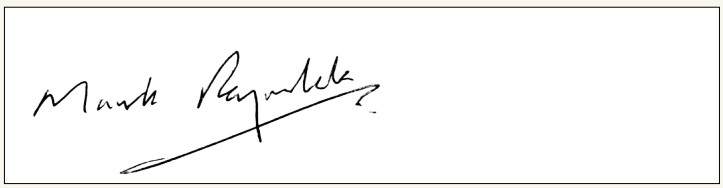
This Carbon Reduction Plan has been completed in accordance with PPN 06/21 and associated guidance and reporting standard for Carbon Reduction Plans.

Emissions have been reported and recorded in accordance with the published reporting standard for Carbon Reduction Plans and the GHG Reporting Protocol corporate standard[3] and uses the appropriate Government emission conversion factors for greenhouse gas company reporting[4].

Scope 1 and 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[5].

This Carbon Reduction Plan has been reviewed and signed off by the board of directors (or equivalent management body).

Signed on behalf of the Supplier:



Mark Reynolds

Mace Group Chairman and Chief Executive

Date: 27th June 2024

[3] https://ghgprotocol.org/corporate-standard

[4] https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

[5] https://ghgprotocol.org/standards/scope-3-standard

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