APEM Group Net Zero Report

Carbon Reduction Plan

1 January 2022 - 31 December 2022





The APEM Group provide progressive ecological and technological solutions to decision makers around the globe, to achieve environmental and social outcomes that matter. It is our responsibility to undertake our activities sustainably, and we aim to promote the protection and enhancement of the environment through scientific integrity and technological innovation.

We are committed to managing our activities to reduce our carbon emissions, to promote environmental sustainability and to conserve and enhance natural resources. It is of utmost importance that we remain committed to our values, delivering environmental change not only through the projects we work on, but also through our own activities. We have therefore committed to achieving Net Zero emissions by the end of 2045: five years earlier than current UK Government targets.

Our carbon reduction plan outlines the actions we will take to achieve our ambitious goals as the Group continues to grow.

Carbon reduction plan for the APEM Group, as we work to achieve and outperform government Net Zero targets for the UK and Ireland.

Carbon emissions are the leading cause of global climate change. We see the effects of climate change in our day to day work, and help our clients to minimise the environmental impact of their activities. Our work in the renewables sector is facilitating the development of greener energy sources and we are supporting clients as they set and take on their own ESG targets.

We are excited about our journey towards Net Zero and see it as one of opportunity and collaboration. By working together, and committing to change, we will find the best way to reach our objectives, for the good of the environment and the world.

Nicola Hunter, Group Finance Director

About us

The APEM Group are a world-class environmental consultancy whose passionate scientists and technical experts engage with clients to provide high quality solutions that have a positive environmental and societal impact. Through the experience and commitment of our people, we will realise our sustainable growth ambitions.

The Group comprises a growing collection of environmental consultancies, providing independent advice and guidance to help governments and organisations around the world monitor and mitigate environmental impacts. As innovators, problem solvers and learners, our expert, technical, and support teams lead the way across multiple industries using the latest technology combined with years of experience and a commitment to core scientific principles. Established in 1987, the APEM Group has evolved with the acquisition of Woodrow in 2021 and AQUAFACT and GoBe in 2022. As we finalise this report in 2023, we have recently welcomed Aspect Ecology, Macro Works and NASH Maritime to the APEM Group. Collectively, the Group offers progressive ecological and technological solutions to clients across the world.



















Commitment to Net Zero

The APEM Group are committed to ensuring that we play our role in working alongside other organisations to achieve the UK and Ireland's government Net Zero targets of at least 100% reduction of net carbon emissions by 2050 (based on 1990 levels) for our operations.

The APEM Group are committed to taking action to reduce our annual emissions and achieving Net Zero emissions by 31 December 2045: five years earlier than the UK Government's 2050 target. This will constitute predominantly absolute emission reduction through Scope 1, 2 and 3. However, as with all businesses, it is likely that there will be some small remaining residual emissions. These remaining residual emissions will be accounted for through investment in carbon removal programmes. We will aim to reduce our emissions year-on-year to achieve:

45%

Reduction in our Scope 1 and 2 emissions by 2030



Continue to offset our residual Scope 1 and 2 emissions from 2022 onwards to maintain carbon neutral status via highquality verified offsets verified offsets



Overall reduction in all intensity Green House Gas (GHG) emissions across Scopes 1, 2 and 3 by 2030, offsetting any residual emissions via high-quality naturebased or direct air capture projects and becoming Net Zero

September 1

Photo: iStock

To achieve these goals, the APEM Group have taken the following actions:

- 1. Appointed an external specialist carbon consultancy to collate and verify data, calculate carbon emissions and help advise on carbon reduction options.
- 2. Set the base year (January 2022 December 2022) and calculated our carbon footprint in line with the GHG protocol for that base year:

Scope 1

i. Gas, Transport and Refrigerants

Scope 2

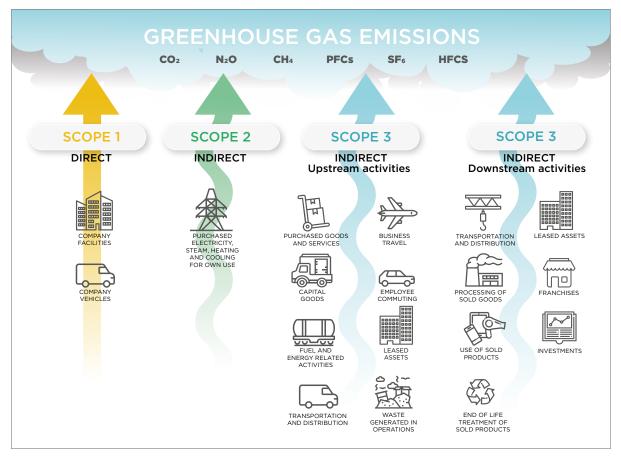
i. Electricity

Scope 3

Selected categories from the below based on materiality:

- i. 8 upstream categories
- ii. 7 downstream categories
- **3.** Created a carbon reduction plan for each scope and selected category.
- **4.** Set the Net Zero date and committed to updating our carbon footprint annually with December 2023 to be the first year post the base year.

Overview of GHG Protocol scopes and emissions across the value chain

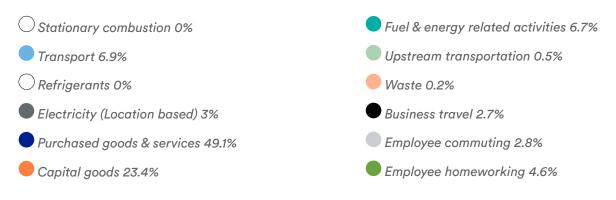


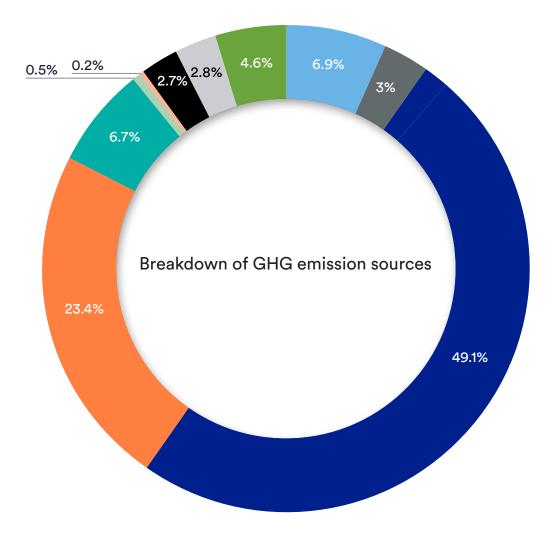
Source: GHG Protocol

Baseline emissions footprint

Baseline emissions are a record of the greenhouse gases that were produced in a previous [financial] year prior to the introduction of any strategies to reduce emissions. Baseline emissions are the reference point against which emissions reduction can be measured. The APEM Group have chosen January 2022 – December 2022 as our baseline year. The APEM Group's 2022 baseline carbon emissions footprint is as follows:

Breakdown of GHG emission sources





Below is an itemised breakdown showing the amount of carbon emissions (tCO_2e) produced by each scope and category from 01 January 2022 - 31 December 2022 baseline calculation.

Scope / Category	Item	Total tCO ₂ e	%	
Scope 1				
Stationary combustion	Fuel / Gas consumed	0.05	0.0%	
Transport	Owned and leased vehicles	221.9	6.9%	
Refrigerants	HVAC's	-	0.0%	
Scope 2				
Electricity (Location based) ¹	Purchased electricity, steam, heating & cooling for own use	96.9	3.0%	
Electricity (Market based) ²	Purchased electricity, for own use (specific contract)	55.2	N/A	
Scope 3				
Cat 1: Purchased goods and services	Goods and services	1,571.8	49.1%	
Cat 2: Capital Goods	CapEx expenditure	750.5	23.4%	
Cat 3: Fuel & energy related activities	WTT (Well-To-Tank) & T&D (Transmission & Distribution losses) from electricity, gas, transport, business travel and employees commuting	215.5	6.7%	
Cat 4: Upstream transportation	Paid transport for goods (upstream & downstream) (well to wheel (WTW)	17.3	0.5%	
Cat 5: Waste	Waste	7.1	0.2%	
Cat 6: Business travel	Land and air travel for business purposes	86.3	2.7%	
Cat 7: Employee commuting	Employees commuting to and back from work	88.4	2.8%	
Cat 7: Employee working from home	Carbon emissions associated with home working utility use	147.1	4.6%	
Total Gross Emissions (Loc	ation based)	3,202.8	100.00%	
Less emissions avoided by	procurement of renewable electricity	(41.8)		
Total Gross Emissions (Ma	rket based)	3,161.0		
Less carbon offsets		(280.00)		
Total Net Emissions		2,881.0		
Scope 1 & 2 (Location Base	d)	318.9	10.0%	
Scope 1 & 2 (Market Based)	277.1	8.8%	
Scope 3		2,883.9	91.2%	

 $^{^{1}}$ Location based represents emissions from electricity consumption based on grid average emissions

 $^{^{2}}$ Market based represents emissions from electricity consumption based on specific energy contracts

To further understand our emissions, we have also recorded them using intensity ratios as this will allow us to track our emissions as our business grows and develops.

Intensity Ratios	Quantity	Gross Emissions (Location based)	Gross Emissions (Market based)	Net Emissions
tCO ₂ e per employee	408	7.85	7.75	7.06
tCO ₂ e per square meter	2,614.76	1.22	1.21	1.10
tCO ₂ e per million £ turnover	36.17	88.55	87.40	79.66

When calculating carbon emissions, the GHG Protocol Corporate Accounting and Reporting Standard states that a company must set its organisational boundaries. This can be done either by an "Equity Share" or "Control" approach. The Equity Share approach reflects a company's economic interests and percentage ownership of companies or subsidiaries to assign GHG emissions. The Control approach can follow two routes and defines the boundary by looking at either how much Financial or Operational Control a company has. To fully cover all of its operations and subsidiaries, the APEM Group have selected the Operational Control method when setting our organisational boundary. This will cover 100 percent of the GHG emission over which it has operational control. The Operational boundary will include all three Scopes as outlined by the GHG Protocol. The APEM Group's emissions are reported in tCO₂e and have been calculated utilising the following formula:

Source emissions data x conversion factor* = total source emissions Source unit x $(tCO_2e/unit) = tCO_2e$

- * Conversion factors are primarily derived from the latest:
- UK Government GHG conversion factors
- DEFRA (Department for Environmental, Food and Rural Affairs)
- Environmentally extended input-output (EEIO) tables
- EPA

Photo: Unsplash

Emissions methodology: Inclusions within current numbers

Scope 1

Scope 1 sources included in the inventory are onsite (or "stationary") natural gas combustion and mobile fuel combustion from leased and owned vehicles. Excluded from the inventory are fugitive emissions of refrigerant gases.

Scope 2

Purchased electricity was the only identified Scope 2 emissions source. However, per the GHG Protocol Scope 2 Guidance, Scope 2 emissions have been calculated and reported using two separate methodologies:

- A location-based method reflecting the average emissions intensity of grids on which energy consumption occurs.
- A market-based method reflecting emissions from the electricity that the APEM Group has purposefully chosen via our energy procurement activities. This accounts for energy purchased from green energy suppliers.

Scope 3

Category 1: Purchased goods and services

This includes all upstream (i.e. cradle-to-gate) emissions from the production of goods purchased or acquired by the APEM Group in the reporting year.

Category 2: Capital Goods

This includes all upstream (cradle-to-gate) emissions from the goods that are not included as part of purchased goods and services – typically CapEx expenditure or plant and equipment purchases.

Category 3: Fuel and energy related services

This relates to transportation and distribution losses, and the well-to-tank emissions for all fuels consumed as a result of the APEM Group's operations

- Well-to-tank emissions account for all the emissions related to the extraction, production, and shipping of fuels excluding only the direct combustion of the fuel. (e.g. fuel consumed by the APEM Group owned or leased vehicles).
- Transmission losses account for all the energy that is lost between the electricity production in the powerplant and when it is used (e.g. resistance in power lines).

Category 4: Upstream transportation

This includes any transportation paid for by the APEM Group such as deliveries couriers. This Is transport between tier 1 and the APEM Group.

Category 5: Waste

This includes emissions from third-party disposal and treatment of waste generated in the APEM Group owned or controlled operations in the reporting year.

 We have utilised the 'waste-type-specific' method, which involves using emission factors for specific waste types and waste treatment methods.

Category 6: Business travel

This includes emissions from the transportation of employees for business-related activities in vehicles owned or operated by third parties, such as aircraft, trains, buses, and passenger cars. This also includes emissions resulting from hotel stays for business-related trips.

- We have used the distance-based method, which involves determining the distance and mode of business trips and then applying the appropriate emission factor for the mode used where possible.
- We have used the number of nights stayed in hotels to calculate the emissions.

Category 7: Employee commuting

This includes emissions from the transportation of employees between their homes and the APEM Group offices. Emissions from employee commuting may arise from car, bus, train, or cab travel. We have also included energy consumption and waste production which occur from employees working from home in this category.

- We have used employee travel surveys to collect data from employees on commuting patterns (e.g. distance travelled, and mode used for commuting) and applied the appropriate emission factors for the modes used using the distance-based method.
- Where certain data is missing or incomplete we have used an average-data method, which involves estimating emissions from employee commuting based on average (e.g. national) data on commuting patterns or vehicle types.

Emissions methodology: non-material exclusions for 2022 baseline emissions

Scope 3

Category 8: Upstream leased assets

Is excluded from 2022 baseline emissions, as we do not lease any assets.

Category 9: Downstream transportation and distribution

Is excluded from 2022 baseline emissions, as we do not do not transport or distribute specific products.

Category 10: Processing of sold products

Is excluded from 2022 baseline emissions, as we do not manufacture products.

Category 11: Use of sold products

Is excluded from 2022 baseline emissions, as we do not sell physical products.

Category 12: End-of-life treatment of sold products

Is excluded from 2022 baseline emissions, as we do not sell physical products.

Category 13: Downstream leased assets

Is excluded from 2022 baseline emissions, as we do not own any leased assets that we lease to other businesses.

Category 14: Franchises

Is excluded from 2022 baseline emissions, as we do not operate franchises.

Category 15: Investments

Is excluded from 2022 baseline emissions, as we do not have any investments whereby, we provide capital or offer financing as a service.



Emission reduction targets

In order to continue our progress to achieving Net Zero, we have mapped out and planned a number of positive actions to achieve the following carbon reduction targets:







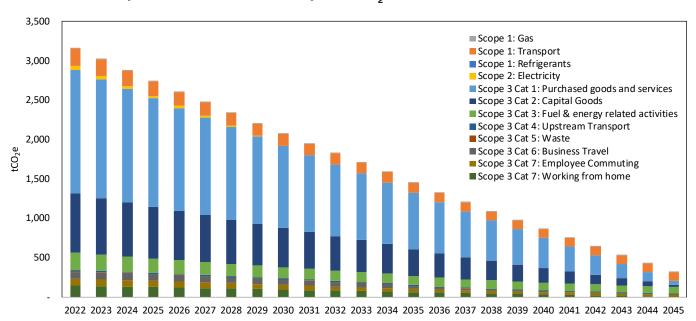


The APEM Group's approach is to focus our efforts on reducing our own emissions, with significant planning and finances set aside to do this. However, as a large proportion of our carbon emissions lie within Scope 3, it is difficult to reduce these emissions within the short term as these are within our supply chain where we have influence but not control. To reduce these Scope 3 emissions, the APEM Group will work with our existing suppliers to support their own sustainability journeys. Through collaboration, our purchase power and choice of future suppliers, we will encourage the correct carbon reducing behaviour within our supply chain.

Scope / Category	2022	2030	2035	2040	2045
Scope 1					
Stationary combustion	0.0	0.0	0.0	0.0	0.0
Transport	221.9	151.5	128.0	109.2	109.2
Refrigerants	-	-	-	-	-
Scope 2					
Electricity	55.2	0.0	-	-	-
Scope 3					
Cat 1: Purchased goods and services	1,571.8	1,043.7	713.6	383.5	53.4
Cat 2: Capital Goods	750.5	498.3	340.7	183.1	25.5
Cat 3: Fuel & energy related activities	215.5	141.5	117.9	98.9	86.5
Cat 4: Upstream transportation	17.3	12.3	9.9	8.0	6.5
Cat 5: Waste	7.1	1.4	1.4	1.4	1.4
Cat 6: Business travel	86.3	68.6	37.5	11.8	1.8
Cat 7: Employee commuting	88.4	60.0	37.7	28.9	28.3
Cat 7: Employee working from home	147.1	97.7	66.8	35.9	5.0
Gross Emissions (Market based)	3,161.0	2,074.9	1,453.5	860.7	317.6

Scope / Category	% Reduction 2022 -2030	% Reduction 2022 -2035	% Reduction 2022 -2040	% Reduction 2022 -2045	
Scope 1					
Stationary combustion	28%	38%	59%	59%	
Transport	32%	42%	51%	51%	
Refrigerants	-	-	-	-	
Scope 2					
Electricity	100%	100%	100%	100%	
Scope 3					
Cat 1: Purchased goods and services	34%	55%	76%	97%	
Cat 2: Capital Goods	34%	55%	76%	97%	
Cat 3: Fuel & energy related activities	34%	45%	54%	60%	
Cat 4: Upstream transportation	29%	43%	54%	63%	
Cat 5: Waste	80%	80%	80%	80%	
Cat 6: Business travel	21%	56%	86%	98%	
Cat 7: Employee commuting	32%	57%	67%	68%	
Cat 7: Employee working from home	34%	55%	76%	97%	
Gross Emissions (Market based)	34%	54%	73%	90%	

The APEM Group Carbon Emission Glidepath tCO,e





Environmental management measures & emission reduction plan

As a responsible business, the APEM Group have historically had a focus on the environment and reducing our carbon emissions. To drive this to the next level, we engaged the services of Sustainable Advantage to advise the APEM Group's Board on global best practices on carbon reduction. We have a detailed carbon emissions reduction plan, the key actions of which are summarised below:



Scope 1: Stationary Combustion (Natural Gas)

- Reduce reliance on gas use and replace gas boilers with electrical heating systems such as air source heat pumps, infra-red panels, electric storage heaters etc. where practical
- Investigate new technologies as they become available and install these where practical (e.g. hydrogen powered boilers)
- Ensure that all our facilities use minimal heating by making sure buildings are fully insulated
- Identify sites with high gas consumption and perform energy surveys to identify capital expenditure (CapEx) opportunities
- Where there this is out of our direct control, we will engage and influence our landlord to consider implementation of these action items. If necessary, upon lease renewal we will consider new lease agreements or site locations to support this transition



Scope 1: Transport (owned and leased vehicles)

- Move from diesel and petrol to hybrid and electric vehicles (EV) as soon as is practical for owned and leased vehicles
- Where moving to EVs is not practical, switch to hybrid vehicles
- Provide driver training on how to drive more efficiently to reduce emissions
- Install vehicle telematics where feasible to gather granular data on driver performance to issue further guidance
- Ensure EVs are charged using green electricity sources where possible, including installing charging points at our sites which are supplied with green electricity contracts
- Glidepath recommendations are aligned to the UK government transition plan for the phase out of sale of internal combustion engine (ICE) cars
- Projected transition fossil fuel vehicles to electric and hybrid vehicles. This a flat transition pathway and does not account for growth:

Fuel Type	2022	2025	2030	2035	2040
Diesel	12	7	3	1	0
Petrol	2	1	1	0	0
Hybrid	0	4	7	7	7
Electric	2	4	6	8	9



Scope 1: Refrigerants

Although zero leaks were noted from air conditioning/refrigeration in 2022, it will be important to collect and maintain detailed data on these units across our sites in the future. We will aim to:

- Avoid emissions through improved leak tightness; consider fitting leak-detection systems and following a regular maintenance schedule
- Ensure correct end-of-life treatment of refrigerant gases; recover and dispose of refrigerant gases correctly when maintaining, upgrading or decommissioning a system
- Substitute refrigerants with other less harmful substances e.g. refrigerant gas with zero ozone depletion potential (ODP) and low global warming potential (GWP)
- When renewing HVAC system, choose the most efficient systems:
 - Investigating systems using least damaging refrigerant gases with low potential leakage
 - Installing new systems may offer energy savings as well as next generation refrigerants (HFOs (hydrofluoro-olefins) and natural refrigerants)
- Limit use of refrigeration/air conditioning systems
- Again, where this is outside of our direct control, we will aim to influence our landlords and consider new lease agreements where necessary



Scope 2: Electricity

43% of our electricity usage is green and our first step to reducing our emissions in this category will be to change the remaining 57% to green contracts. We will engage with our landlords to request green energy at sites where we don't have direct control.

In addition to this, it will be important to reduce our electricity consumption via the following:

- Energy efficiency guides will be issued to all site staff to facilitate positive behavioural change
- Green champions at each site will be gathering up-to-date monthly energy performance data to provide feedback
- Energy champions to be appointed gather ideas from colleagues across our organisation. These ideas will be collated and shared, supplemented by what we consider to be best practices

To work with our landlords to promote energy reduction and energy saving programmes:

- The use of energy efficient systems wherever possible, e.g. replacing lights with LED and using passive infra-red sensors (PIRs) where possible
- Request the potential or feasibility to install green energy production facilities onsite where practicable (e.g. solar panels, wind turbines)
- Request energy surveys to be completed at sites consuming large amounts of electricity to identify CapEx opportunities
- Upon site lease renewal, energy consumption and energy efficiency should be an important consideration to ensure alignment to support our Net Zero targets





Scope 3 category 1: Purchased goods and services & Scope 3 category 2: Capital Goods

The APEM Group realise that much of the GHG reductions in this category will happen because of our suppliers reducing their carbon emissions and becoming more carbon aware as the UK progresses towards Net Zero 2050. However, that does not mean that we will take a passive approach to these categories, especially they account for the majority of our emissions. Scope 3 Category 1 accounts for 47.9% and Scope 3 category 2 accounts for 22.9% of our total emissions. Therefore, it is of utmost importance to try and enact positive change with our suppliers. We will:

- Engage with tier 1 suppliers to first understand their carbon footprint (Scopes 1 and 2) by sending out carbon surveys
- Be selective about working with sophisticated carbon suppliers (where possible), and additionally, support suppliers to reduce their emissions
- Work with suppliers to collaboratively set carbon emissions reductions targets, for example, 85% of our spend and 31% of the carbon emissions in Scope 3 category 1 involves either environmental or technical consultancy services related to the environment. And so, requesting carbon emission data and favouring those that are actively tracking and reducing their emissions ensures alignment to the APEM Group's Net Zero targets in the longer term
- Look at aerial surveys, as 43% of the total emissions in scope 3 category 1 are associated with purchasing the services of subcontracted aircraft for surveys
 - It will be important to investigate the necessity of aerial surveys to completed for projects on a caseby-case basis
 - The consideration of aircraft suppliers that use greener fuels, such as waste derived Sustainable Aviation Fuel (SAF) or biofuels
 - The feasibility of completing surveys with new and developing technologies, such as high resolution satellite imagery or electric drones. The implementation of this should be considered where feasible on a case-by-case basis
 - It may be possible to consider on trial basis for certain projects
- Prefer local suppliers, where possible Scope 3 category 1
- Request life cycle assessments for products purchased and choose lower emission products where feasible



Scope 3 category 4: Upstream Transportation

Although a small emissions impact, emissions are present as part of upstream transport through purchased deliveries and couriers.

• Where feasible the APEM Group will look to consider lower emission suppliers as part of upstream transport. This can include suppliers that have EVs as part of their fleet.



Scope 3 category 5: Waste

- The APEM Group already follows the waste hierarchy, where a preference is given in order to:
 - Reduce the waste generated
 - Re-using/recycling as much as possible
 - Limit the volume of waste that goes to landfill by incinerating residual general waste
- To ensure more accurate emission reporting in this category, the APEM Group will look to collect detailed waste data for all sites, including volume of waste and final destination. We will look to change suppliers or engage with our landlords for those who send waste to landfill
- We will track the disposal methods of our various waste streams
- Staff training programmes will be rolled out to provide clear, consistent training and information to minimise waste and maximise recycling
- The APEM Group aim to have zero waste to landfill by 2027



Scope 3 category 6: Business travel

- COVID-19 has taught us that video conferencing tools such as Teams and Zoom can very successfully
 facilitate meetings. We are encouraging our staff to continue to embrace this technology to minimise
 travel
- Where travel is required, we will consider incentives for the use of public transport and prioritise carbonreducing travel modes, choosing rail over air and/or cars and encouraging the uptake of EV vehicles by
 paying favourable mileage reclaim rates and considering the installation of EV charging points at our sites,
 where practical
- We will also begin collecting more granular data on hotel stays to better calculate our GHG emissions in future years
 - Incentives for use of Public Transport for business travel



Scope 3 category 7: Employee commuting (including working from home)

We recognise that we cannot influence what modes of travel our employees use. That said, we need to do all we can to encourage them to join us on our sustainable journey. We will endeavour to achieve this by:

- Completing travel surveys to understand how our employees are currently get to and from work
- Putting in place initiatives to include:
 - Cycle-to-work schemes
 - Encouraging carpool arrangements
 - Providing information on public transport alternatives
 - Working with our landlords to discuss installing EV charge points at our office locations

Regarding working from home, we will:

- Collect granular data by sending a survey to all employees working from home to understand their energy, waste and water usage during working hours
- Implement an awareness campaign for reducing the working from home carbon footprint:
 - Encourage switching to renewable energy tariffs where possible
 - Install SMART meters
 - Reduce energy consumption of home appliances
 - Reduce, reuse, recycle, limit waste sent to landfill



Conclusion

The APEM Group will recalculate our carbon footprint annually, with 2023 being the first post-base year. It will be important for us to collect more data to ensure we can accurately track and calculate our carbon emissions. We will track how we are performing against our targets and adjust our methods to ensure we stay on track to hit our Net Zero target.

The APEM Group will continue to do all we can to minimise our emissions and do our part to minimise the negative effects of climate change on the planet.



