MAG GREENHOUSE GAS EMISSIONS REPORT, 2022/23

INTRODUCTION

Manchester Airports Group (MAG) owns and operates Manchester, London Stansted and East Midlands Airports. We understand our responsibility to tackle climate change; by reducing our own emissions and playing a part in helping to decarbonise the wider sector – creating a sustainable aviation industry for the future.

We know that climate change is an important issue for a wide range of our stakeholders, and it is for us too. Over recent years we have seen an increased focus from all stakeholders on climate change. In 2020 MAG published its Corporate Social Responsibility (CSR) Strategy: 'Working together for a brighter future'. Our Strategy marks the transition to a new strategic priority: 'Zero carbon airports', and our commitment to become a net zero carbon business by 2038. Our headline target is accompanied by a range of other commitments, which will ensure MAG plays its full part in addressing airport-related emissions, including from aircraft and surface access transport.

In parallel with launching our new Strategy, we have enhanced the way in which we disclose information about the climate impacts of our airports and the way in which climate change will itself impact our business. By listening to local voices, industry partners and other stakeholders, we know people would like to know more about airport-related emissions. As such, with the aim of providing greater transparency, we publish the following information:

- MAG Annual Report and Accounts
  Which includes an overview of MAG's energy use and emissions, as required by the Streamlined Energy and Carbon Reporting (SECR) regime which was introduced by the Companies (Directors' Report) and Limited Liability Partnerships (Energy and Carbon Report) Regulations 2018. This year,we have continued to implement the recommendations from the Task Force on Climate-related Financial Disclosures (TCFD). Additional information has been provided about the physical and transitional risks climate change presents to our business. Our Annual Report and Accounts are available on our website.

- MAG CSR Report 2022/23: Working together for a brighter
  Where we detail our climate-related achievements during the last year, and performance against our CSR Strategy. This is accompanied by an overview of our carbon footprint and an insight into our CSR Programmes. Our CSR Report is prepared in accordance with the Global Reporting Initiative (GRI) Universal Standards 2021. The Report, our GRI Contents Index and disclosures are publishedon our website.

- Greenhouse Gas Emissions Report (this report)
  A more detailed report providing information about how we measure our energy use and greenhouse gas (GHG) emissions, our indirect emissions and our carbon neutrality and carbon offsetting. The content of this report, which includes GHG emissions inventories and verification statements, is relatively technical. Readers will need to be familiar with climate change, GHG accounting methodologies and associated terminology.

- Climate Change Adaptation Report
  Which was submitted to Government in December 2021, outlining our latest views on the impacts climate change will have upon our airport operations and the actions we are taking to minimise impacts. The Report is available on our website.

MAG is fully committed to transparent reporting, which responds to the needs and expectations of our stakeholders. If you have any questions about this report, or ideas about how we could improve it, please contact us by email at: CSR@magairports.com.

SCOPE

In preparing this report, we have followed environmental reporting guidelines published by the Government, adopted the principles of the World Resources Institute (WRI) GHG Protocol Corporate Standard and implemented the sector-specific requirements of Airport Carbon Accreditation.

We have adopted the 'operational control' approach set out in the WRI GHG Protocol. As such, this report considers energy and emissions from all of MAG's UK operations, including:

- East Midlands Airport;
- London Stansted Airport;
- Manchester Airport; and,
- All other facilities MAG use which are not at its airports.

We report energy use in kilowatt hours (kWh) and emissions in tonnes of carbon dioxide equivalent (tCO_2e). This approach allows analysis between different energy sources and expresses emissions of greenhouse gases (GHGs) covered by the Kyoto Protocol in terms of the global warming potential (GWP) equivalent of one unit of carbon dioxide (CO_2e). Reporting is aligned with our financial year, which runs from 1 April to 31 March.

Scope 1 and 2 emissions

Our report details all of MAG's location and market-based Scope 1 and 2 emissions.

Straddling our 2006 commitment to carbon neutrality and our 2020 commitment to net zero carbon, this report adopts a hybrid-approach to reporting the climate impact of refrigerant gases. We recognise that the climate impact of refrigerant gases is, and will increasingly be, important. Whilst these emissions are included in our 2020 net zero carbon commitment, they were not included within the scope of our 2006 carbon neutral commitment and are also not included within the scope of Airport Carbon Accreditation Level 3+ (Neutrality). On this basis we have not included these emissions in our emissions inventories – but do detail them within the verification statements issued by the TÜV NORD (Appendix 1 – Verification statements).

Scope 3 emissions

We have developed our Scope 3 footprint to include emissions from the activities of greatest impact, those over which we have the greatest ability to drive emission reduction and those which we know are important to stakeholders. As a starting point, we report all indirect emissions required by the Airport Carbon Accreditation programme, which is itself informed by an independent Advisory Board comprising distinguished industry and environmental experts. In addition, we report emissions from all departing flights – for the whole flight, as well as the 'landing and take-off cycle' (LTO) emissions from all arriving flights. We also report surface access emissions from all staff working at our airports, whether directly employed by MAG or another organisation. We will continue to calculate and report emissions from home working as this has become increasingly prominent as we move out of the pandemic.

Over time, we will assess other indirect emissions and introduce them to our reporting where we find that they are significant, of interest to stakeholders or from an activity where we can influence significant emission reductions. For example, in 2015/16 we undertook a detailed assessment of emissions from our supply chain, confirming these emissions were less than 1% of our overall footprint and that our major suppliers were within the lower emission 'service sector'. Since then, we have built our Scope 3 emission inventory, and this is included in this report. Our CSR Strategy also includes commitments to introduce a league table identifying the most efficient aircraft operators and to implement assessments of the embodied carbon within our large construction projects. We will provide updates on these important initiatives in future reports.

METHODOLOGY

Information about how we calculate our emissions is presented below. Unless otherwise stated, emissions have been calculated by combining information about energy use with the UK Government GHG Conversion Factors for Company Reporting.

Scope 1 and 2

Our Scope 1 and 2 energy use and associated emissions are calculated using a collection of primary data. Where this has not been possible, we have estimated consumption by extrapolating historic energy use.

Estimations are based on previous period data which is usually a calculated as a rolling average of the previous three months of data. If this is not available, an average of the previous 12 months or same quarterin the previous year is taken.

Activity	Fuel/emission source	Description	Source data and emission calculation methodology
Fuels combustion	Gas	Natural gas used in fixed equipment including boilers and combined heat and power (CHP) units to produce heat, hot water and energy for our buildings.	Measured consumption based on supplier invoices and/or meter readings, including 'deduction' submeters which measure energy supplied by MAG to tenants and concessionaires. Data gaps filled using estimates based on historic consumption.
	LPG	Liquified petroleum gas (LPG) used in fixed equipment including boilers and fire service training facilities to produce heat, hot water and for fire service training.	Supplier invoices for regular deliveries.
	Gas oil	Gas oil used in fixed equipment including boilers and fire service training facilities to produce heat, hot water and for fire service training.	Supplier invoices for regular deliveries.
	Biomass	Wood used in fire service training facilities for fire service training.	Historic measurement of wood used for typical training activity, multiplied by actual number of training events.
	Petrol	Petrol used in fire service training facilities for fire service training.	Supplier invoices for regular deliveries.
	Kerosene	Kerosene used in fire service training facilities for fire service training.	Supplier invoices for regular deliveries.
Owned transport	Diesel	Diesel used in vehicles owned or leased by MAG.	Fuelling records from MAG and fuel card supplier fuelling systems.
	Gas oil	Red diesel used in vehicles owned or leased by MAG. Also includes gas oil used in back-up generators, which it is not possible to monitor separately.	Fuelling records from MAG fuelling systems and supplier invoices for regular deliveries.
	Petrol	Petrol used in vehicles owned or leased by MAG.	Fuelling records from MAG and fuel card supplierfuelling systems.
	Company cars	Company cars leased by MAG business travel and/or personal use by employees.	Manufacturer certified emission performance multiplied by maximum contracted mileage.
Generation of renewable electricity on site	Wind generated electricity	Electricity generated by wind turbines, owned and operated by MAG and connected directly to East Midlands Airport's private electrical network.	Measured electricity production based on meter readings. Because MAG receives feed in tariff payments for its wind generated electricity, it does not own the renewable energy attribute and must therefore report emissions using the 'Electricity: UK' emission factor for both location and market-based emissions.

Activity	Fuel/emission source	Description	Source data and emission calculation methodology
Consumption of purchased electricity, heat, steam and cooling	Consumption of purchased electricity	Electricity purchased and used by MAG in fixed equipment including our airport terminals, airfields, offices and associated infrastructure. Includes electricity consumed by electric and hybrid-electric vehicles owned or leased by MAG when charging from a MAG electricity connection.	Measured consumption based on supplier invoices and/or meter readings, including 'deduction' submeters which measure energy supplied by MAG to tenants and concessionaires. Data gaps filled with estimate based on historic consumption.
Avoided emissions	Purchase and retirement of carbon offsets	Retirement of carbon offsets to compensate for residual MAG Scope 1 and 2 market-based emissions.	N/A.

Table 1. Scope 1 and 2 emissions categories and methodologies.

Scope 3

Our Scope 3 emissions are calculated using primary data as a preference. However, the nature of indirect emissions, which are the direct responsibility of another company or individual, means that primary data is not always available to us. Where we do not have primary data, we have developed robust modelling and sampling methodologies to estimate our indirect emissions.

Activity	Fuel/emission source	Description	Source data and emission calculation methodology
Transport-related activities	MAG staff commuting	MAG's directly employed staff commuting to and from MAG airports for work, either in private vehicles or by public transport.	Emissions for 'typical MAG employee' calculated using most recent staff travel surveys (2018-19 at East Midlands, 2018-19 at LondonStansted and 2022-23 at Manchester Airports). Multiplied by actual number of MAG staff at each airport.
	Other airport staff commuting	Staff employed by other companies commuting to and from MAG airports for work, either in private vehicles or by public transport.	Emissions for 'typical non-MAG employee' calculated using most recent staff travel surveys (2018-19 at East Midlands, 2018-19 at LondonStansted and 2022-23 at Manchester Airports). Multiplied by actual number of airport-based staff employed by other employers.
	Home working	MAG colleagues working fromhome.	Emissions calculated using EcoAct's Home Working Emissions Methodology. This uses industry standard estimates for typical electricity and natural gas consumption and is calculated based on the number of staff working from home. The energy consumption estimates are based on workstation equipment needed as well as heating and cooling of homes during office hours.
	Business travel - public transport	Business travel undertaken by MAG staff using public transport (including air travel).	Business travel records, including travel mode, class and distance.
	Business travel – staff vehicles	Business travel undertaken by MAG staff using private vehicles owned or leased by MAG staff.	Expense claim records, Government conversion factor for 'average car unknown fuel'.
Downstream transport and distribution	Passenger surface access	Passengers 'surface access' travelling to and from MAG airports in private vehicles or by public transport.	Emissions for 'typical passenger' calculated using results of passenger surveys undertaken in 2022-23 Multiplied by actual number of passengers during financial year.
Aircraft	LTO cycle (departures)	For flights departing from an MAG airport: Departure phases of the landing and take-off (LTO) cycle defined by the International Civil Aviation Organisation (ICAO). Includes aircraft taxiing from parking stand to runway, taking off and climbing to a height 3,000 feet above ground level.	Emissions calculated by Eurocontrol in accordance with their methodology for the European Environment Agency and United Nations Framework Convention on Climate Change (UNFCCC). Eurocontrol's model uses information about flights, flight routes and aircraft performance certification data to calculate emissions. Data is received over six months in arrears, we rescale emissions from calendar year 2019 to reflect the number of flights during 2022/23

Activity	Fuel/emission source	Description	Source data and emission calculation methodology
	En-route (departures, excl. MAG airport LTO cycle)	For flights departing an MAG airport: Phases of flight between an aircraft passing 3,000ft after departure and the aircraft parking at destination airport.	
	LTO cycle (arrivals)	For flights arriving at an MAG airport: Arrival phases of the LTO cycle defined by ICAO. Includes approaching aircraft from a height of 3,000 feet above ground level, landing and taxiing from runway to parking stand.	
	On stand power (FEGP and APU)	Systems used to provide power to run systems on parked aircraft. Includes fixed electric ground power (FEGP) and auxiliary power units (APUs).	FEGP: Consumption based on metered electricity consumption, reported within MAG Scope 2 where metering is not available. APU: 'Typical turn-around' APU run-time measured through operational monitoring, multiplied by fuel flow figures for typical APU for each aircraft type.
Tenants and concessionaires – airside vehicles and MAG-supplied energy	Airside vehicles	Vehicles and equipment operated by other companies on the airfield at MAG airports. Includes vehicles which support aircraft and airport operations.	Emissions for 'typical vehicle' calculated using fuelling records from MAG fuelling systems for vehicles where MAG is the fuel supplier. Multiplied by total number of airside vehicles (monitored trough 'airside vehicle permit' records).
	Gas	Natural gas supplied by MAG to tenants and concessionaires for use in fixed equipment including boilers and catering facilities operated.	Measured consumption based on meter readings. Data gaps filled with estimate based on historic consumption.
	Heating oil	Heating oil supplied by MAG to tenants and concessionaires for use in fixed equipment including boilers.	Fuelling records from MAG fuelling systems and supplier invoices for regular deliveries.
	Electricity	Electricity supplied by MAG to tenants and concessionaires for use in fixed equipment and vehicles.	Measured consumption based on meter readings. Data gaps filled with estimate based on historic consumption.
Waste	Waste	Disposal of waste from MAG facilities.	Waste emissions are measured based on tonnage, waste disposal route (recycled, landfill, recovered).
Avoided emissions	Purchase and retirement of carbon offsets	Retirement of carbon offsets to compensate for emissions from MAG business travel.	N/A.

Table 2. Scope 3 emission sources and associated methodologies

Assurance

The methodologies used to monitor our energy and fuel use, and to calculate our carbon footprint, have been developed and refined over a number of years. We believe they represent best practice and are committed to continually improving them. Our methodologies are aligned with government guidance and the WRI GHG Protocol.

Our internal management processes, which are certified to ISO 14001, the international standard for environmental management, provide assurance that we have robust approaches to measuring and monitoring energy use and emissions. Data is independently validated by our specialist climate change consultants, who we appoint to prepare our carbon footprint.

Additionally, we commission TÜV Nord to provide independent assurance of our GHG emission inventory. Their verification statements are included as Appendix 1 – Verification statements.

Restated figures

Where methodology improvements or new information have resulted in changes to previously reported figures, these have been restated. Minor adjustments have been made to the reported figures for gas oil, LPG and kerosene at Manchester Airport.

CARBON NEUTRALITY AND CARBON OFFSETS

Our airport operations are independently certified carbon neutral. Each of our airports holds Level 3+ (Neutrality) Airport Carbon Accreditation. More information about Airport Carbon Accreditation is available online.

Although we have made significant investments to reduce our energy use and purchase renewable energy, MAG does still have a small gross carbon footprint. To compensate for these residual emissions, MAG purchases Gold Standard carbon offsets.

Our GHG emission inventories include details of our carbon offset retirements. An overview of carbon offsets purchased to cover residual emissions in 2022/23 and restatements made to 2021/22, including links to public registries which detail ourretirements, provide information about the project which generated them and host independent verificationstatements, are provided in Table 3.

MAG business unit	Offsets retired for 2022/23	Gold Standard Registry link
East Midlands Airport	1,323 tonnes	Link
Manchester Airport	11,202 tonnes	Link
London Stansted Airport	2,893 tonnes	Link
MAG	696 tonnes	Link

Table 3. Carbon offset retirements, 2022/23

GHG EMISSION REPORTS

SECR Report

The SECR report, published in our Annual Report and Accounts, is presented as Table 4. This report provides a high-level overview of our energy use, emissions and carbon intensity as required by the Companies (Directors' Report) and Limited Liability Partnerships (Energy and Carbon Report) Regulations 2018.

We measure carbon intensity against traffic units, which are equivalent to 1,000 passengers or 100 tonnes of freight and mail.

	2022/23	2021/22[1]	2020/21[1]
Energy consumption used to calculate emissions (kWh)	194,775,860	182,337,077	181,314,564
Emissions from combustion of gas (Scope 1, tCO_2e)	11,463	11,524	11,905
Emissions from combustion of fuel for transport purposes (Scope 1, tCO_2e)	2,500	3,061	2,322
Emissions from business travel in rental cars or employee-owned vehicles where MAG is responsible for purchasing the fuel (Scope 3, tCO_2e)	109	58	7
Emissions from purchased electricity[2] (Scope 2, location-based, tCO_2e)	23,564	22,737	25,074
Emissions from purchased electricity (Scope 2, market-based, tCO_2e)	52	49	59
Total gross emissions based on the above (Location-based, tCO_2e)	37,636	37,380	39,309
Total gross emissions based on the above (Market-based, tCO_2e)	14,124	14,692	14,293
Intensity measure (Traffic units)[3]	61,128	28,448	12,013
Intensity ratio (Location-based emissions, tCO_2e /traffic unit)	0.62	1.31	3.27
Intensity ratio (Market-based emissions, tCO_2e /traffic unit)	0.23	0.52	1.19
Carbon offsets (purchased and retired, tCO_2e)	14,124	14,692	14,293
Total net emissions based on the above (Location-based, tCO_2e)	23,531	22,688	25,015
Total net emissions based on the above (Market-based, tCO_2e)	0	0	0

Table 4. SECR Report 2022/23.

[1] Our energy and emission performance have been restated for previous years to make use of the most recent and complete dataset. This approach follows best practice outlined in the World Resources Institute Greenhouse Gas Protocol and guidance issued by the UK Government.

[2] Location-based emissions are based on the average emission intensity of the UK electricity grid. MAG proactively choses to purchase renewable electricity which is backed by Renewable Energy Guarantees of Origin. To demonstrate the carbon saving of our procurement decision we 'dual report' our location and market-based greenhouse gas emissions.

[3] We measure carbon intensity against traffic units, which are defined by the International Civil Aviation Organization (ICAO) as equivalent to 1,000 passengers or 100 tonnes of freight.

Greenhouse gas emission inventories

GHG emission inventories for each of our airports and MAG's combined UK operations are provided as Tables 5, 7, 9 and 11. These inventories provide greater detail about our direct energy use, and our Scope1, 2 and 3 GHG emissions. Tables 6, 8, 10 and 12 outline the intensity of our Scope 1 and 2, and Scope 1, 2, and 3 emissions relative to the traffic units handled. One traffic unit is equivalent to 1,000 passengersor 100 tonnes of freight and mail.

Scope	Activity	Fuel/emission source	Energy consumption (kWh)		Location-based emissions (tCO2e)		Market-based emissions (tCO2e)	
			2022/23	2021/22	2022/23	2021/22	2022/23	2021/22
1	Fuels combustion	Gas	6,097,028	6,127,736	1,113	1,122	1,113	1,122
		LPG	19,471	19,167	4	4	4	4
		Gas oil	501,095	451,439	137	116	137	116
		Biomass	1,322	918,356	0	14	0	14
		Petrol	933	178	0	0	0	0
		Kerosene	3,903	9,054	1	2	1	2
	Owned transport	Diesel		55,564		14		14
		Gas oil		563,266		145		145
		Petrol		10,932		3		3
		Company cars		143,761		37		37
	Total Gross Scope 1		6,623,752	8,299,453	1,255	1,456	1,255	1,456
2	Generation of renewable electricityon site	Wind generated electricity	268,201	228,476	52	49	52	49
	Consumption of purchased electricity, heat, steam and cooling	Consumption of purchased electricity	10,580,645	7,952,123	2,046	1,688	-	-
	Total Gross Scope 2		10,848,846	8,180,599	2,098	1,737	52	49
1 & 2	Total Gross Scopes 1 & 2		17,472,598	16,480,052	3,353	3,193	1,307	1,505
	Avoided emissions	Purchase and retirement of carbon offsets			1,255	1,456	1,255	1,456
	Total avoided emissions				1,255	1,456	1,255	1,456
	Total Net Scope 1 & 2 emissions				2,098	1,737	52	49
3	Transport-related activities	MAG staff commuting			992	581	992	581
		Other airport staff commuting			13,771	8,047	13,771	8,047
		Home working			19	13	19	13
		Business travel - public transport			13	5	13	5
		Business travel – staff vehicles			1	-	1	-
	Downstream transport and distribution	Passenger surface access			22,309	2,812	22,309	2,812
	Aircraft	LTO cycle (departures)			38,315	42,379	38,315	42,379
		En-route (departures, excl. MAG airport LTO cycle)			453,466	412,395	453,466	412,395
		LTO cycle (arrivals)			16,768	18,546	16,768	18,546
		On stand power (FEGP and APU)			2,352	2,165	2,352	2,165
	Tenants and concessionaires – airside vehicles and MAG-supplied energy	Airside vehicles			1,237	1,145	1,237	1,145
		Gas						
		Heating oil				18		18
		Electricity	5,531,673	7,208,213	1,070	1,531	-	-
	Waste and Water	Waste			88	44	88	44
		Wastewater			57	38	57	38
		Water			38	25	38	25
	Total Gross Scope 3				550,495	489,742	549,425	488,211
	Avoided emissions	Purchase and retirement of carbon offsets			1,255	1,456	1,255	1,456
1, 2 & 3	Total Net Scopes 1, 2 & 3				549,240	488,286	548,170	486,755

Table 5. GHG Emission inventory, East Midlands Airport

Scope	Activity	Fuel/emission source	Location-based emissions (tCO_2e)		Market-based emissions (tCO_2e)	
			2022/2023	2021/2022	2022/2023	2021/2022
	Intensity benchmark	Total traffic units (TU)	7,187	5,694	7,187	5,694
1 & 2		Scopes 1 & 2 Gross Emissions/TU	0.5	0.5	0.2	0.3
		Scopes 1 & 2 Net Emissions/TU	0.3	0.3	-	-
1, 2 & 3		Scopes 1, 2 & 3 Gross Emissions/TU	77.0	86.5	76.6	86.0
		Scopes 1, 2 & 3 Net Emissions/TU	76.9	86.3	76.4	85.7

Table 6. GHG Emission intensity, East Midlands Airport

Scope	Activity	Fuel/emission source	Energy consumption (kWh)		Location-based emissions (tCO2e)		Market-based emissions (tCO2e)	
			2022/23	2021/22	2022/23	2021/22	2022/23	2021/22
1	Fuels combustion	Gas	11,144,068	12,429,484	2,051	2,285	2,051	2,285
		LPG	114,449	34,152	26	7	26	7
		Gas oil	115,849	139,664	32	36	32	36
		Biomass	0		0		0	
		Petrol	0		0		0	
		Kerosene	0		0		0	
	Owned transport	Diesel	2,849,909	1,485,840	687	363	687	363
		Gas oil	0	519,294	0	133	0	133
		Petrol	120,892	125,579	27	29	27	29
		Company cars	0	130,231	0	32	0	32
	Total Gross Scope 1		14,345,167	14,864,244	2,824	2,886	2,824	2,886
2	Generation of renewable electricityon site	Wind generated electricity	0	0	0	0	0	0
	Consumption of purchased electricity, heat, steam and cooling	Consumption of purchased electricity	41,907,335	33,464,712	8,104	7,106	0	0
	Total Gross Scope 2		41,907,335	33,464,712	8,104	7,106	0	0
1 & 2	**Total Gross Scopes 1 & 2**		56,252,502	48,328,956	10,928	9,992	2,824	2,886
	Avoided emissions	Purchase and retirement of carbon offsets			2,824	2,886	2,824	2,886
	Total avoided emissions				2,824	2,886	2,824	2,886
	Total Net Scope 1 & 2 emissions				8,104	7,106	0	0
3	Transport-relatedactivities	MAG staff commuting			4,393	2,549	4,393	4,393
		Other airport staff commuting			33,128	19,361	33,128	33,128
		Home Working			285	147		285
		Business travel - public transport			69	18	69	18
		Business travel – staff vehicles			0	0	0	0
	Downstream transportand distribution	Passenger surface access			196,209	36,274	196,209	36,274
	Aircraft	LTO cycle (departures)			162,020	96,176	162,020	96,176
		En-route (departures, excl. MAG airport LTO cycle)			1,583,631	940,058	1,583,631	940,058
		LTO cycle (arrivals)			72,669	43,137	72,669	43,137
		On stand power (FEGP and APU)			4,919	2,738	4,919	2,738
	Tenants and concessionaires – airside vehicles and MAG-supplied energy	Airside vehicles			2,909	1,496	2,909	1,496
		Gas	92,063	44,418	17	98	17	98
		Heating oil						
		Electricity	29,184,349	27,714,237	5,644	5,885	0	0
	Waste and water	Waste			89	44	89	44
		Wastewater			103	90	103	90
		Water			182	158	182	158
	Total Gross Scope 3				2,066,266	1,148,229	2,060,337	1,158,094
	Avoided emissions	Purchase and retirement of carbon offsets			2,824	2,886	2,824	2,886
1, 2 & 3	**Total Net Scopes 1, 2 & 3**				2,063,442	1,145,342	2,057,514	1,155,208

Table 7. GHG Emission inventory, London Stansted Airport

Scope	Activity	Fuel/emission source	Location-based emissions (tCO_2e)		Market-based emissions (tCO_2e)	
			2022/23	2021/22	2022/23	2021/22
	Intensity benchmark	Total traffic units (TU)	28,068	13,058	28,068	13,058
1 & 2		Scopes 1 & 2 Gross Emissions/TU	0.389	0.765	0.101	0.221
		Scopes 1 & 2 Net Emissions/TU	0.289	0.544	-	-
1, 2 & 3		Scopes 1, 2 & 3 Gross Emissions/TU	74.0	88.7	73.5	88.9
		Scopes 1, 2 & 3 Net Emissions/TU	73.5	87.7	73.3	88.5

Table 8. GHG Emission intensity, London Stansted Airport

Scope	Activity	Fuel/emission source	Energy consumption (kWh)		Location-based emissions (tCO2e)		Market-based emissions (tCO2e)	
			2022/23	2021/22	2022/23	2021/22	2022/23	2021/22
1	Fuels combustion	Gas	45,386,153	44,317,073	8,299	8,117	8,299	8,117
		LPG	144,459	229,487	33	49	33	49
		Gas oil	391,283	73,058	107	19	107	19
		Biomass	-	-	-	-	-	-
		Petrol	-	-	-	-	-	-
		Kerosene	-	-	-	-	-	-
	Owned transport	Diesel	7,323,867	7,524,983	1,766	1,841	1,766	1,841
		Gas oil	-	1,532,583	-	394	-	394
		Petrol	-	-	-	-	-	-
		Company cars	-	256,296	-	64	-	64
	Total Gross Scope 1		53,245,762	53,933,480	10,205	10,483	10,205	10,483
2	Generation of renewable electricity on site	Wind generated electricity	-	-	-	-	-	-
	Consumption of purchased electricity, heat, steam and cooling	Consumption of purchased electricity	69,081,837	65,416,476	13,359	13,890	-	-
	Total Gross Scope 2		69,081,837	65,416,476	13,359	13,890	-	-
1 & 2	Total Gross Scopes 1 & 2		122,327,600	119,349,956	23,564	24,373	10,205	10,483
	Avoided emissions	Purchase and retirement of carbon offsets	-	-	10,205	10,483	10,205	10,483
	Total avoided emissions			-	10,205	10,483	10,205	10,483
	Total Net Scope 1 & 2 emissions			-	-	13,359	-	-
3	Transport-related activities	MAG staff commuting			3,388	2,403	3,388	2,403
		Other airport staff commuting			22,262	23,597	22,262	23,597
		Home working			57	48	57	48
		Business travel - public transport			147	24	147	24
		Business travel – staff vehicles			-	-	-	-
	Downstream transport and distribution	Passenger surface access			197,808	39,731	197,808	39,731
	Aircraft	LTO cycle (departures)			148,958	79,850	148,958	79,850
		En-route (departures, excl. MAG airport LTO cycle)			2,401,081	1,287,118	2,401,081	1,287,118
		LTO cycle (arrivals)			70,027	37,539	70,027	37,539
		On stand power (FEGP and APU)			9,379	5,058	9,036	4,908
	Tenants and concessionaires – airside vehicles and MAG-supplied energy	Airside vehicles			4,659	2,038	4,659	2,038
		Gas	23,889,290	20,378,831	4,366	3,733	4,366	3,733
		Heating oil						
		Electricity	46,209,923	36,087,219	8,936	7,662	-	-
	Waste and water	Waste			974	388	974	388
		Wastewater			260	177	260	177
		Water			486	352	486	352
	Total Gross Scope 3				2,872,789	1,489,718	2,863,510	1,481,906
	Avoided emissions	Purchase and retirement of carbon offsets			10,205	10,483	10,205	10,483
1, 2 & 3	Total Net Scopes 1, 2 & 3				2,862,583	1,479,235	2,853,305	1,471,423

Table 9. GHG Emission inventory, Manchester Airport

Scope	Activity	Fuel/emission source	Location-based emissions (tCO_2e)		Market-based emissions (tCO_2e)	
			2022/23	2021/22	2022/23	2021/22
	Intensity benchmark	Total traffic units (TU)	25,873	9,695	25,873	9,695
1 & 2		Scopes 1 & 2 Gross Emissions/TU	0.911	2.514	0.394	1.081
		Scopes 1 & 2 Net Emissions/TU	0.516	1.433	-	-
1, 2 & 3		Scopes 1, 2 & 3 Gross Emissions/TU	111.9	156.0	111.1	153.9
		Scopes 1, 2 & 3 Net Emissions/TU	111.5	155.0	110.3	151.8

Table 10. GHG Emission intensity, Manchester Airport

Scope	Activity	Fuel/emission source	Energy consumption (kWh)		Location-based emissions (tCO2e)		Market-based emissions (tCO2e)	
			2022/23	**2021/22**	**2022/23**	**2021/22**	**2022/23**	**2021/22**
1	Fuels combustion	Gas	62,627,250	62,874,294	11,463	11,524	11,463	11,524
		LPG	278,379	282,806	64	61	64	61
		Gas oil	1,008,226	664,161	275	171	275	171
		Biomass	1,322	918,356	0	14	0	14
		Petrol	933	178	0.21	0.04	0.21	0.04
		Kerosene	3,903	9,054	1	2	1	2
	Owned transport	Diesel	10,196,802	5,335,029	2,459	1,305	2,459	1,305
		Gas oil	-	2,615,143	-	671	-	671
		Petrol	180,246	136,658	41	32	41	32
		Company cars	-	540,340	-	132	-	132
	Total Gross Scope 1		74,297,061	73,376,019	14,303	13,913	14,303	13,913
2	Generation of renewableelectricity on site	Wind generated electricity	268,201	228,476	52	49	52	49
	Consumption of purchased electricity, heat, steam and cooling	Consumption of purchased electricity	121,585,741	106,854,682	23,512	22,688	-	-
	Total Gross Scope 2		121,853,942	107,083,157	23,564	22,737	52	49
1 & 2	Total Gross Scopes 1 & 2		196,151,003	180,459,176	37,867	36,650	14,355	13,961
	Avoided emissions	Purchase and retirement of carbon offsets	-	-	14,303	13,961	14,303	13,961
	Total avoided emissions			-	14,303	13,961	14,303	13,961
	Total Net Scope 1 & 2 emissions			-	23,564	22,688	52	-
3	Transport-related activities	MAG staff commuting	-	-	8,773	5,533	8,773	5,533
		Other airport staff commuting	-	-	69,162	51,005	69,162	51,005
		WFH	-	-	180	207	180	207
		Business travel - public transport	-	-	772	150	772	150
		Business travel – staff vehicles	-	-	109	58	109	58
	Downstream transport and distribution	Passenger surface access	-	-	416,325	78,818	416,325	78,818
	Aircraft	LTO cycle (departures)	-	-	349,292	218,405	349,292	218,405
		En-route (departures, excl. MAG airport LTO cycle)	-	-	4,438,177	2,639,571	4,438,177	2,639,571
		LTO cycle (arrivals)	-	-	159,463	99,221	159,463	99,221
		On stand power (FEGP and APU)	-	-	16,650	9,961	16,307	9,810
	Tenants and concessionaires – airsidevehicles and MAG- supplied energy	Airside vehicles	-	-	8,805	4,679	8,805	4,679
		Gas	23,981,352	20,423,249	4,383	3,831	4,383	3,831
		Heating oil	-	-	-	18	-	18
		Electricity	80,925,946	71,009,669	15,649	15,077	-	-
	Waste and water	Waste	-	-	1,151	476	1,151	476
		Wastewater	-	-	420	305	420	305
		Water	-	-	705	535	705	535
	Total Gross Scope 3		-	-	5,490,018	3,127,851	5,474,026	3,112,623
	Avoided emissions	Purchase and retirement of carbon offsets	-	-	14,303	13,961	14,303	13,961
1, 2 & 3	Total Net Scopes 1, 2 & 3		-	-	5,475,715	3,113,889	5,459,722	3,098,661

Table 11.GHG Emission inventory, MAG

Scope	Activity	Fuel/emission source	Location-based emissions (tCO_2e)		Market-based emissions (tCO_2e)	
			2022/23	**2021/22**	**2022/23**	**2021/22**
	Intensity benchmark	Total traffic units (TU)	61,128	28,448	61,128	28,448
1 & 2		Scopes 1 & 2 Gross Emissions/TU	0.619	1.288	0.235	0.491
		Scopes 1 & 2 Net Emissions/TU	0.385	0.798	-	-
1, 2 & 3		Scopes 1, 2 & 3 Gross Emissions/TU	90.4	111.2	89.8	109.4
		Scopes 1, 2 & 3 Net Emissions/TU	90.2	110.7	89.5	109.9

Table 12. GHG Emission intensity, MAG

TÜVNORD

CERTIFICATE

Carbon Footprint 2022/2023

according to GHG Protocol - A Corporate Accounting and Reporting Standard (https://ghgprotocol.org/)

The Carbon Footprint was verified by TÜV NORD CERT GmbH in accordance with DIN EN ISO 14064-3: 2020 regarding its correctness and completeness for

Manchester Airports Holdings Limited
East Midlands Airport
Castle Donington
Derby DE74 2SA
Great Britain

MAG

Acting as an independent Certification Body TÜV NORD CERT GmbH has verified the carbon footprint of the organization for the reporting period **01.04.2022 - 31.03.2023 (inclusive)**

to be **102,099** t CO_2e.

The level of assurance is limited. The carbon footprint includes Scopes 1, 2 and 3 (location-based approach).
The calculation of the carbon footprint comprises of emissions arising from:
Scope 1: Stationary and Mobile Combustion, Fugitive Emissions.
Scope 2: Electricity purchased (Location based).
Scope 3: Onward supply, water, waste-water, WTT and T&D, business travel, employee commuting and working from home, cargo handling, landing and take offs, auxiliary power units and fixed electrical ground power.

Certificate Registration No. 44 776 220954-003
Audit Report No. 3534 8989

Zydeck

Certification Body
at TÜV NORD CERT GmbH

Essen, 2023-09-29

TÜV NORD CERT GmbH Am TÜV 1 45307 Essen www.tuev-nord-cert.com

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Deutsche
Akkreditierungsstelle
D-VS-12007-01-00

TÜVNORD

CERTIFICATE

Carbon Footprint 2022/2023

according to GHG Protocol - A Corporate Accounting and Reporting Standard (https://ghgprotocol.org/)

The Carbon Footprint was verified by TÜV NORD CERT GmbH in accordance with DIN EN ISO 14064-3: 2020 regarding its correctness and completeness for

Manchester Airports Holdings Limited
London Stansted Airport
Bassingbourn Road
Stansted CM24 1QW
Great Britain

Acting as an independent Certification Body TÜV NORD CERT GmbH has verified the carbon footprint of the organization for the reporting period **01.04.2022 - 31.03.2023 (inclusive)**

to be **521,025** t CO_2e.

The level of assurance is limited. The carbon footprint includes Scopes 1, 2 and 3 (location-based approach).
The calculation of the carbon footprint comprises of emissions arising from:
Scope 1: Stationary and Mobile Combustion, Fugitive Emissions.
Scope 2: Electricity purchased (Location based).
Scope 3: Onward supply, water, waste-water, WTT and T&D, business travel, employee commuting and working from home, cargo handling, landing and take offs, auxiliary power units and fixed electrical ground power.

Certificate Registration No. 44 776 220954-002
Audit Report No. 3534 8989

Zydeck

Certification Body
at TÜV NORD CERT GmbH

Essen, 2023-09-29

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CERTIFICATE

Carbon Footprint 2022/2023

according to GHG Protocol - A Corporate Accounting and Reporting Standard (https://ghgprotocol.org/)

The Carbon Footprint was verified by TÜV NORD CERT GmbH in accordance with DIN EN ISO 14064-3: 2020 regarding its correctness and completeness for

Manchester Airports Holdings Limited
Manchester Airport
Manchester M90 1QX
Great Britain

Acting as an independent Certification Body TÜV NORD CERT GmbH has verified the carbon footprint of the organization for the reporting period **01.04.2022 - 31.03.2023 (inclusive)**

to be **548,580** t Co_2e.

The level of assurance is limited. The carbon footprint includes Scopes 1, 2 and 3 (location-based approach).
The calculation of the carbon footprint comprises of emissions arising from:
Scope 1: Stationary and Mobile Combustion, Fugitive Emissions.
Scope 2: Electricity purchased (Location based).
Scope 3: Onward supply, water, waste-water, WTT and T&D, business travel, employee commuting and working from home, cargo handling, landing and take offs, auxiliary power units and fixed electrical ground power.

Certificate Registration No. 44 776 220954-001
Audit Report No. 3534 8989

Certification Body
at TÜV NORD CERT GmbH

Essen, 2023-09-29

TÜV NORD CERT GmbH Am TÜV 1 45307 Essen www.tuev-nord-cert.com

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D-VS-12007-01-00

CERTIFICATE

Carbon Footprint 2022/2023

according to GHG Protocol - A Corporate Accounting and Reporting Standard (https://ghgprotocol.org/)

The Carbon Footprint was verified by TÜV NORD CERT GmbH in accordance with DIN EN ISO 14064-3: 2020 regarding its correctness and completeness for

Manchester Airports Holdings Limited
Olympic House
Manchester M90 1QX
Great Britain

with the locations according to the annex

Acting as an independent Certification Body TÜV NORD CERT GmbH has verified the carbon footprint of the organization for the reporting period **01.04.2022 - 31.03.2023 (inclusive)**

to be **1,173,294** t CO_2e.

The level of assurance is limited. The carbon footprint includes Scopes 1, 2 and 3 (location-based approach).
The calculation of the carbon footprint comprises of emissions arising from:
Scope 1: Stationary and Mobile Combustion, Fugitive Emissions.
Scope 2: Electricity purchased (Location based).
Scope 3: Onward supply, water, waste-water, WTT and T&D, business travel, employee commuting and working from home, cargo handling, landing and take offs, auxiliary power units and fixed electrical ground power.

Certificate Registration No. 44 776 220954
Audit Report No. 3534 8989

Zydeck

Certification Body
at TÜV NORD CERT GmbH

Essen, 2023-09-29

TÜV NORD CERT GmbH Am TÜV 1 45307 Essen www.tuev-nord-cert.com

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Akkreditierungsstelle
D-VS-12007-01-00

ecoact
an atos company

This is to certify that

Manchester Airports Group

has offset

- **1,886 tCO_2e**

through project: Improved Cookstoves in Ugandan Communities (Kyoga Uganda Cookstove)
Location: Uganda

London Stansted Airport

REF: Y2023 - 11951

Registry controlled by Ecocert Environment,
An independent / third-party / external body

ENVIRONNEMENT
ECOCERT

EcoAct,
Nature & Technology Based Solutions

Date: 31/08/2023

This is to certify that

Manchester Airports Group

has offset

- **1,323 tCO_2e**

through project: Improved Cookstoves in Ugandan Communities (Kyoga Uganda Cookstove)
Location: Uganda

East Midlands Airport

REF: Y2023 - 11950

Registry controlled by Ecocert Environment,
An independent / third-party / external body

EcoAct,
Nature & Technology Based Solutions

Date: 31/08/2023

south pole

Gold Standard

CERTIFICATE OF CLIMATE PROTECTION

This certificate verifies that

Manchester Airports Group

has compensated

696 tonnes of greenhouse gas emissions

by investing in South Pole's climate protection projects:
Small Scale Solar Project, Sri Lanka (304043)
BioLite Improved Stove Programme, Uganda (301920)

Renat Heuberger
CEO, South Pole

13 CLIMATE ACTION

Thank you for committing to bold climate action. Your contribution is not only a meaningful step towards mitigating climate change globally, but also changes lives for the better by contributing to the Sustainable Development Goals set out by the UN.

Retirement ID	1. GS1-1-LK-GS11417-21-2021-23195-1-10081
Retirement ID	2. GS1-1-UG-GS7318-16-2021-23514-1-7859
Retirement ID	2. GS1-1-UG-GS7318-16-2022-23515-1-2879
Certificate number	C2833EN, 08.2023
Date	25/08/2023

This certificate is issued by South Pole. For more information about our services and more than 700 climate protection projects, please visit: southpole.com/projects.
The CO_2 emissions indicated on the certificate are compensated through investments in the above mentioned carbon offset projects based on international standards.

south pole

Gold Standard

CERTIFICATE OF CLIMATE PROTECTION

This certificate verifies that

Manchester Airport

has compensated

11,202 tonnes of greenhouse gas emissions

by investing in South Pole's climate protection projects:
Small Scale Solar Project, Sri Lanka (304043)
BioLite Improved Stove Programme, Uganda (301920)

Renat Heuberger
CEO, South Pole

13 CLIMATE ACTION

Thank you for committing to bold climate action. Your contribution is not only a meaningful step towards mitigating climate change globally, but also changes lives for the better by contributing to the Sustainable Development Goals set out by the UN.

Retirement ID	1. GS1-1-LK-GS11417-21-2021-23195-1-10081
Retirement ID	2. GS1-1-UG-GS7318-16-2021-23514-1-7859
Retirement ID	2. GS1-1-UG-GS7318-16-2022-23515-1-2879
Certificate number	C2831EN, 08.2023
Date	25/08/2023

This certificate is issued by South Pole. For more information about our services and more than 700 climate protection projects, please visit: southpole.com/projects.
The CO_2 emissions indicated on the certificate are compensated through investments in the above mentioned carbon offset projects based on international standards.

south pole

Gold Standard

CERTIFICATE OF CLIMATE PROTECTION

This certificate verifies that

London Stansted Airport

has compensated

1,007 tonnes of greenhouse gas emissions

by investing in South Pole's climate protection projects:
Small Scale Solar Project, Sri Lanka (304043)
BioLite Improved Stove Programme, Uganda (301920)

Renat Heuberger
CEO, South Pole

13 CLIMATE ACTION

Thank you for committing to bold climate action. Your contribution is not only a meaningful step towards mitigating climate change globally, but also changes lives for the better by contributing to the Sustainable Development Goals set out by the UN.

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Retirement ID	2. GS1-1-UG-GS7318-16-2021-23514-1-7859
Retirement ID	2. GS1-1-UG-GS7318-16-2022-23515-1-2879
Certificate number	C2832EN, 08.2023
Date	25/08/2023

This certificate is issued by South Pole. For more information about our services and more than 700 climate protection projects, please visit: southpole.com/projects.
The CO_2 emissions indicated on the certificate are compensated through investments in the above mentioned carbon offset projects based on international standards.