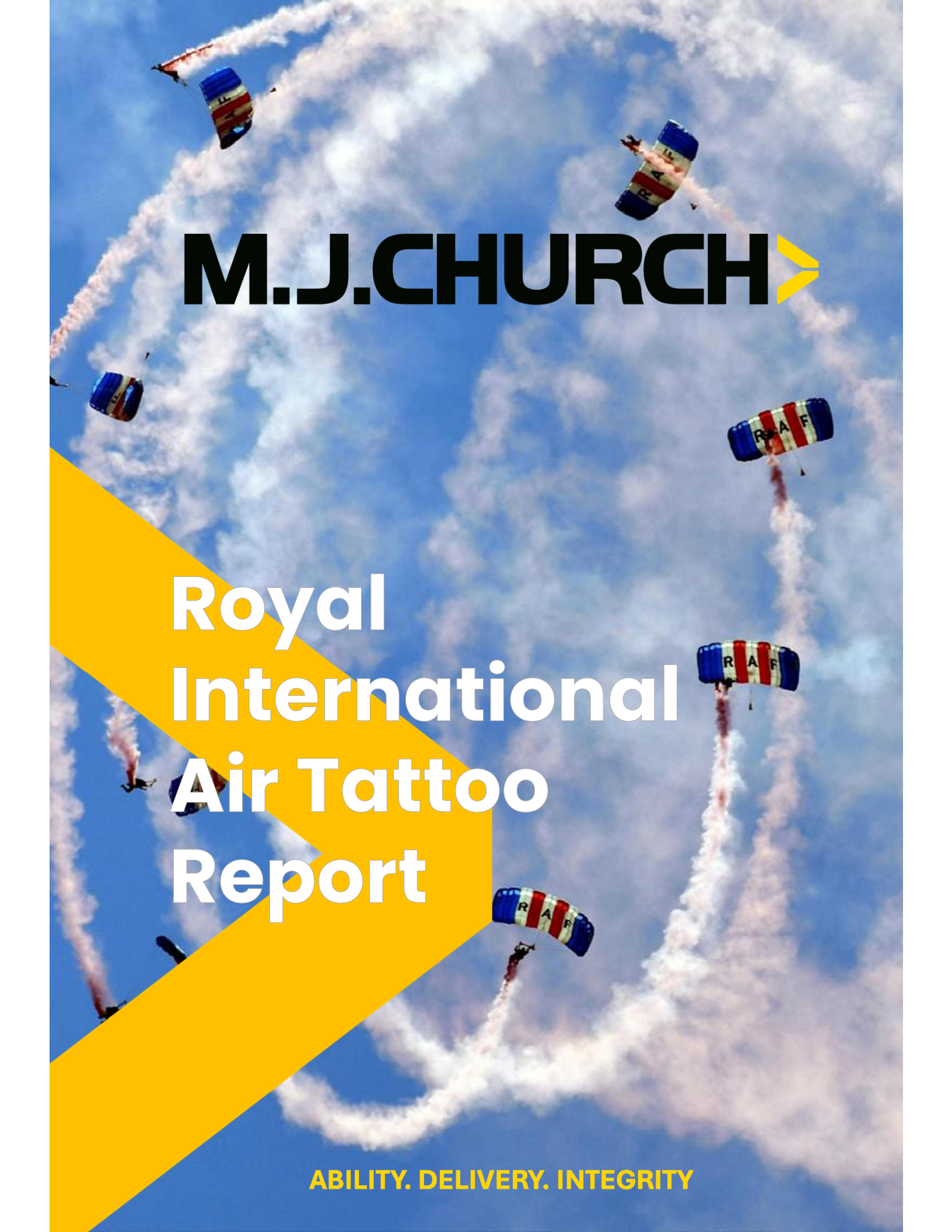




M.J.CHURCH ➤

**Royal
International
Air Tattoo
Report**

ABILITY. DELIVERY. INTEGRITY

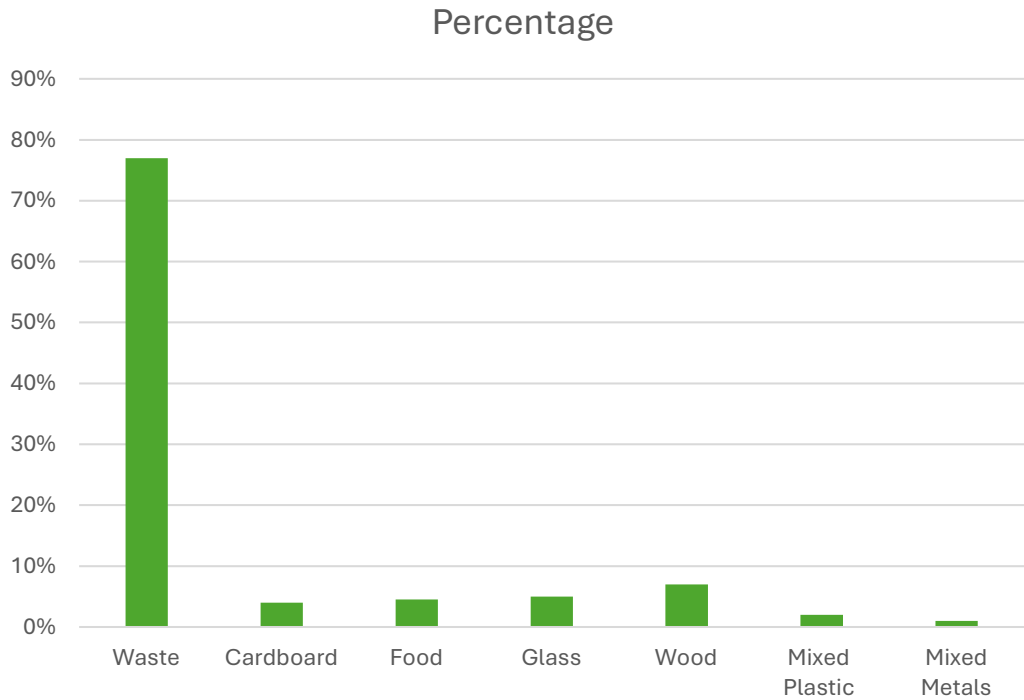
Event Details

Address:	The Royal International Air Tattoo Douglas Bader House Horcott Hill Fairford Gloucestershire GL7 4RB
Project Overview:	Event Waste Management Services (Waste Management)
Date of Assessment:	August 2025
Project Duration:	Repeats once per year
Data Sources:	Weigshoft 5 Verilocation carbonintensity.org.uk gov.uk reporting conversion factors circularise www.airtattoo.com

Waste Report

Waste Removed from RIAT 2025

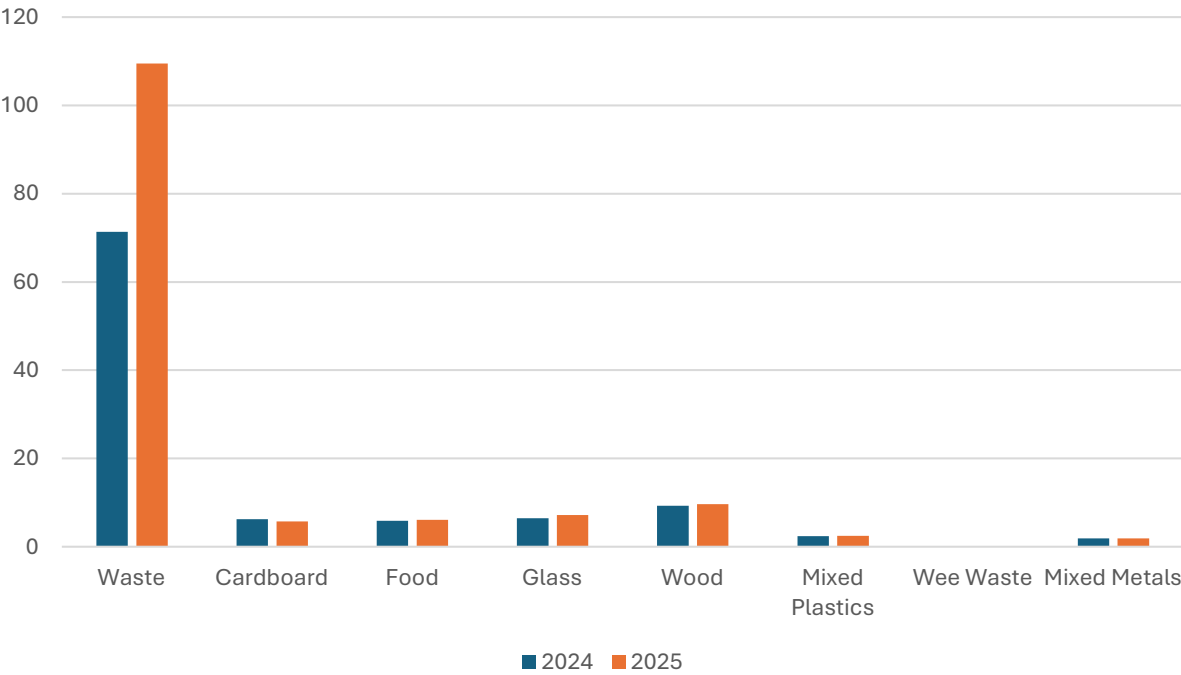
2025 Waste Data	
Material	Tonnages
Waste	109.5T
Cardboard	5.72T
Food	6.08T
Glass	7.2T
Wood	9.68T
Mixed Plastic	2.46T
Mixed Metals	1.86T
	142.5T



Waste Removed from RIAT 2024 v Riat 2025 (in tonnes)

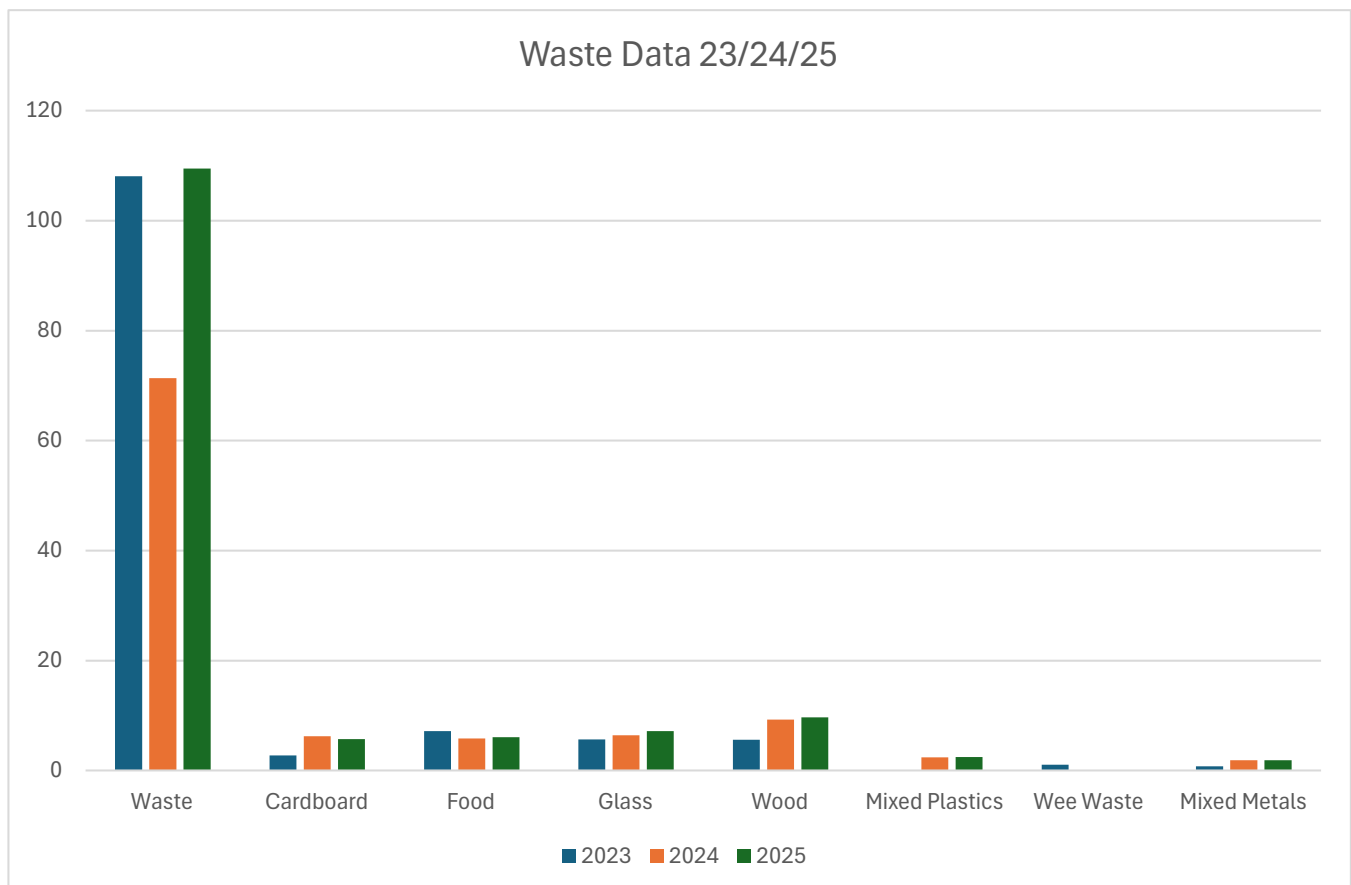
2024 Waste Data		2025 Waste Data	
Material	Tonnages	Material	Tonnages
Waste	71.38	Waste	109.5
Cardboard	6.24	Cardboard	5.72
Food	5.86	Food	6.08
Glass	6.44	Glass	7.2
Wood	9.28	Wood	9.68
Mixed Plastic	2.38	Mixed Plastic	2.46
Mixed Metals	1.87	Mixed Metals	1.86
	103.45		142.5

Data 2024 v 2025



Waste 2023,2024 & 2025

2023 Waste Data		2024 Waste Data		2025 Waste Data	
Material	Tonnages	Material	Tonnages	Material	Tonnages
Waste	108.08	Waste	71.38	Waste	109.5
Cardboard	2.76	Cardboard	6.24	Cardboard	5.72
Food	7.18	Food	5.86	Food	6.08
Glass	5.64	Glass	6.44	Glass	7.2
Wood	5.62	Wood	9.28	Wood	9.68
Mixed Plastics	0	Mixed Plastic	2.38	Mixed Plastic	2.46
Wee Waste	1.06	Mixed Metals	1.87	Mixed Metals	1.86
Mixed Metals	0.76				
	131.1		103.45		142.5



What happens to the waste that we remove from RIAT?

Mixed General Waste

All of the General Waste that is removed from RIAT is processed at our state of the art MRF at Star Farm in Chippenham.

Our MRF is a fundamental component in the commercial waste recycling journey.

78% of the waste that is processed through the MRF is recycled, the remaining **22%** is transported to a Waste to Energy facility which ensures a minimal impact to the environment and allows us to uphold our zero to landfill promise.

The MRF receives mixed waste from across the MJ Church business including general waste, cardboard, plastics, wood, metals and more.

A combination of manual and automated processes allow us to separate the recyclates (recyclable materials) into single material streams in preparation for onward recycling.

The ability for us to transport co-mingled waste into the MRF as opposed to collecting individual waste streams also helps to limit transport movements which subsequently reduces our impact on the environment.

What happens to the waste the we remove from RIAT?

Cardboard

The production of cardboard waste is often unavoidable.

However, it is possible to recycle cardboard up to 10 times before it reaches the end of its life – 12.5 millions tonnes of cardboard are used in the UK every year– over 70% of this is recycled.

100% of the cardboard that MJ Church collect is recycled – none of it ends up in landfill.

In summary, cardboard recycling is achieved using the following process;

- Collection and Sorting
- Baling
- Transportation to a paper mill
- Break down the bale, shred the cardboard
- Pulping and filtering
- Drying-out and conversion back into corrugated board

Recycling one tonne of cardboard saves

- 17 trees,
- 1,440 litres of oil
- 2.3 cubic meters of landfill space
- 4,000 kilowatts of energy
- 26,500 litres of water

What happens to the waste the we remove from RIAT?

Food

We collect vast quantities of food waste every day from a wide range of businesses including shops, hotels and restaurants.

Following collection, we transport Food waste to an AD (anaerobic digestion) facility where it begins the recycling process;

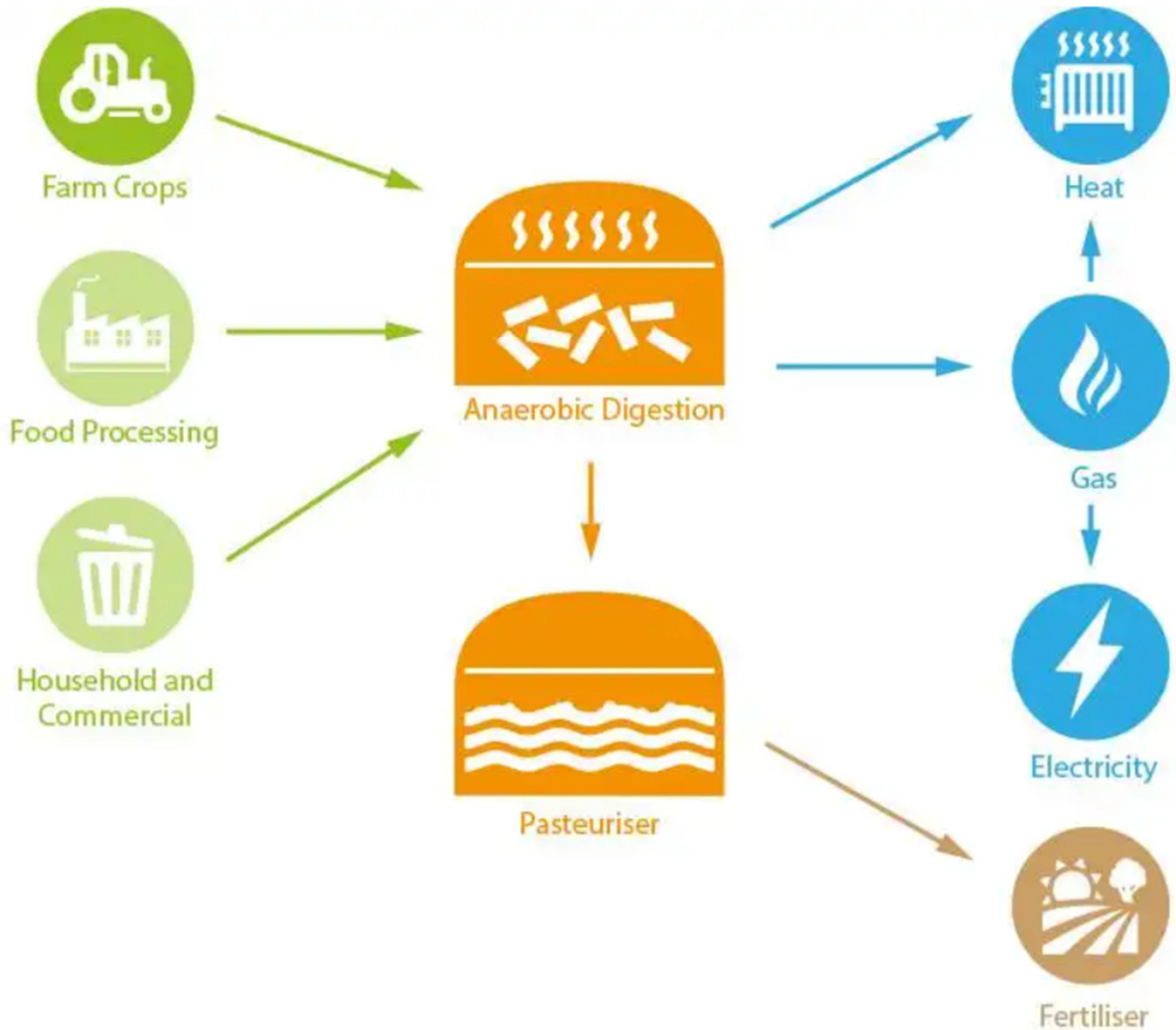
In summary:

- Food waste is placed into an anaerobic digester, where micro-organisms break it down before it is heated inside a large vessel system.
- During this process methane and carbon dioxide are released which create a product called biogas. This gas is captured and used to generate electricity, heat, or fuel.
- Additionally, this process also produces a bio-fertiliser which is spread over farmland, assisting with production of new crop.

Each tonne of food waste recycled by anaerobic digestion prevents 1 tonne of CO₂ re-entering the earth's atmosphere.

What happens to the waste the we remove from RIAT?

Food (Continued)



What happens to the waste the we remove from RIAT?

Glass Waste

Glass is 100% recyclable and can be endlessly recycled – without loss of quality.

New glass is made from four main ingredients: sand, soda ash, limestone and other additives for colour or special treatments. All of these raw materials have to be quarried, using up natural resources and utilising energy for extraction and processing.

Therefore by simply recycling glass, we can reduce non-renewable fossil fuel usage and reduce the emissions of process CO₂ from raw materials such as limestone.

Each tonne of recycled glass added to the furnace saves 1.2 tonnes of raw materials.

For each tonne of glass recycled, 500kg of CO₂ is saved across the supply chain, air pollution is reduced by 20% and water pollution cut by 50%!

In summary, glass recycling is achieved using the following process;

- Transported to a reprocessing facility
- Mechanically sorted and crushed
- Contaminants removed
- Mixed with raw materials to enhance properties as necessary
- Melted in a furnace
- Moulded or blown into new bottles or jars

What happens to the waste the we remove from RIAT?

Wood Waste

Wood is used in many different products, so it's unsurprising that we all have so much wood waste to dispose of.

The UK uses around 5 million tonnes of wood every year and as time has moved forward, there are now a number of recycling options available including biomass and re-purposing.

The wood waste that we collect is processed into a fuel which is then fed into a Biomass system.

Biomass is a renewable energy source; the incineration process does release carbon dioxide, but considerably less than fossil fuels.

Alternatively, Other products for recycled wood include:

- Landscape Surfaces.
- Mulches or ground covering for gardens,
- Decking boards or epoxy-resin-cased shredded wood,
- Wood chip play areas

Where did your waste go?

Waste Stream	Facility	Location
General Waste	MJ Church / Viridor	Chippenham/ Avonmouth
Cardboard	Ecogen Recycling	Winchester
Food	Biogen/Geneco	Bristol
Glass	UMR Group	West Yorkshire
Wood	South West Wood	Newport
Mixed Plastic	AWD Group	Port Talbot
Mixed Metal	EMR	Swindon

Carbon Report

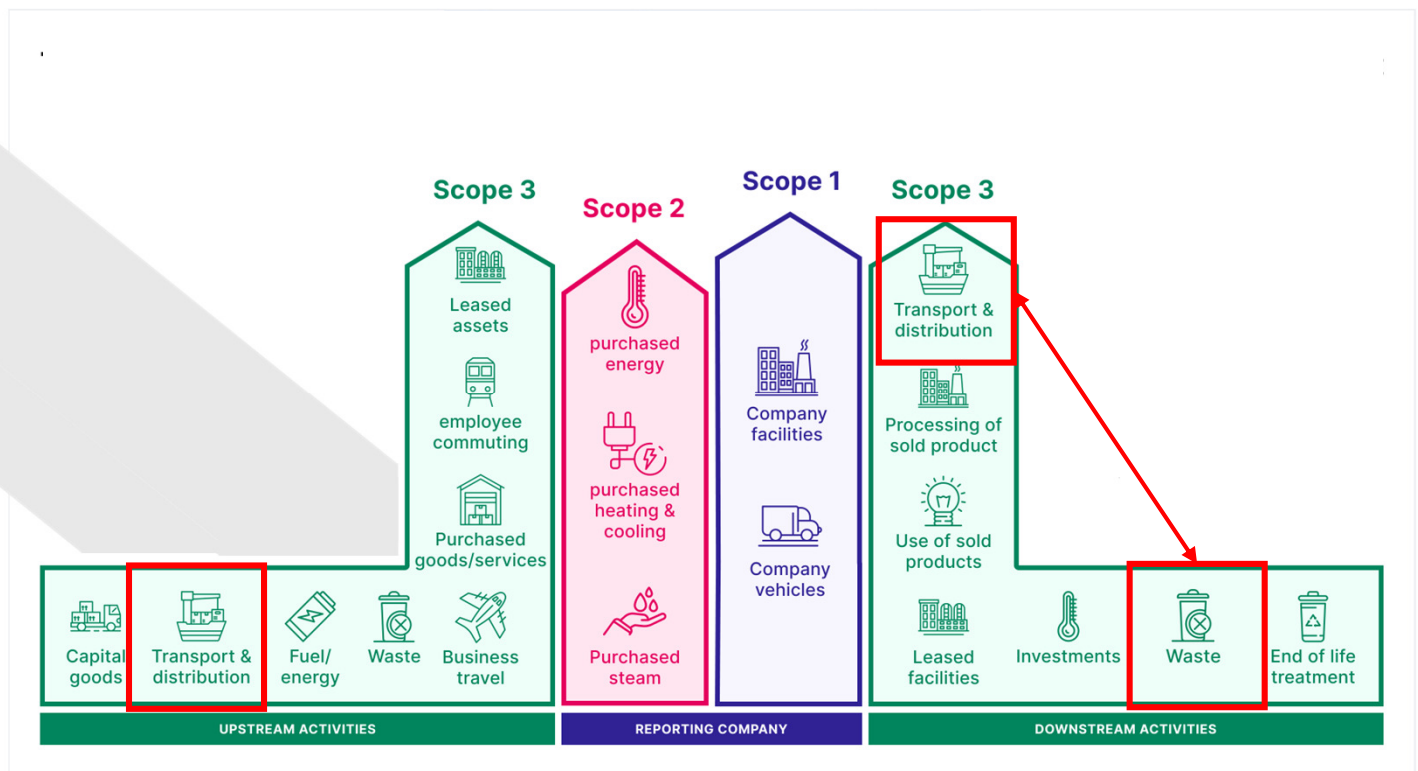
Scope of the report

Understanding Emission Scopes:

Scope 1: Direct emissions from sources owned or controlled by the organisation (e.g., fuel combustion in owned vehicles or generators).

Scope 2: Indirect emissions from the generation of purchased electricity, steam, heating, and cooling consumed by the organisation.

Scope 3: All other indirect emissions that occur in the value chain of the reporting company, including both upstream and downstream emissions.



Waste produced at a public event, such as RIAT, falls under **Scope 3 emissions**.

Waste Disposal: Emissions from the transportation, processing, and final treatment or disposal of waste generated at the event. This includes:

- **Collection and transportation of waste. (Report scope)**
- Emissions from recycling, composting, waste.
- Emissions from waste incineration.
- Emissions from landfill (if applicable)

Why Waste at Public Events Falls Under Scope 3:

- **Indirect Nature:** The event organisers do not directly control the waste disposal process but it is a consequence of the event's activities.
- **Value Chain Emissions:** Waste management is a downstream activity in the event's value chain, contributing to the overall carbon footprint of the event indirectly.

Examples:

Transportation of Waste: Emissions from trucks transporting waste from the event site to disposal or processing facilities.

Waste Processing: Emissions from facilities that recycle, compost, or incinerate the waste.

Disposal Emissions: Greenhouse gases emitted from EFW facilities where waste is disposed of.

What are RIAT's sustainability goals?

Sustainability section of the RIAT website states:

"Here at the Royal Air Charitable Trust Enterprises, we recognise that, in our day-to-day operations, our business impacts the environment in many ways. We are determined to make clear, measurable and positive changes to the way we work, to do the right thing. We are aware that these changes will not happen overnight and we want to ensure that we make real lasting improvements to the way we work."

Extract Taken from 'Royal Air Force Charitable Trust Enterprises – Sustainability Development Policy

RAFCTE is committed to:

- *"Seeking continuous improvement in all aspects of the company's sustainability performance "*
- *"Seeking to influence contractors and partners at RIAT, along with the supply chain they support, to improve their sustainability performance."*

How MJ Church can assist

Waste Audits and Planning

- **Waste Audit:** By conducting a waste audit, we analyse the types and volumes of waste generated at the event. This involves assessing waste streams to understand the proportion of recyclables, compostables, and general waste. This information helps us implement waste reduction and recycling techniques.
- **Tailored Waste Management Plan:** With our extensive knowledge of events waste production, layout, and operations, we develop a detailed waste management plan. This plan outlines specific strategies for waste reduction, segregation, collection, and disposal, informed by the audit findings.

Recycling Infrastructure

- **Recycling Stations:** Leveraging our event expertise, we will continue to set up strategically placed recycling stations across the venue. These stations will be clearly marked and equipped with separate bins for different materials, accompanied by innovative and informative signage.

Electric Refuse Collection Vehicle (RCV)

- **Utilising Electric RCV's:** A unique offering from MJ Church is our ability to deploy electric RCVs for waste collection during the event. This reduces the carbon footprint associated with waste transport and demonstrates both parties' commitment to sustainable practices. In 2025, we have fulfilled our promise to introduce a second RCV to RIAT.
- **Trials of further electric vehicles:** We are already in talks to trial electric mules, with the intention to incorporate them into our offering and deploy these at RIAT 2026.

Sustainably Focused Workforce

- **Training and Education:** Our workforce is regularly briefed on sustainable waste management practices. This includes accurate segregation of recyclables, proper waste handling, and the efficient use of electric RCVs.

Experience in Carbon Reporting and Reduction Techniques

- **Diverse, Family-Owned Business:** MJ Church is a large, diverse, family-owned business with a strong commitment to sustainability.
- **Management Commitment:** Our management team is deeply committed to improving sustainability practices and reducing carbon emissions.
- **Contracting Division Expertise:** Our Contracting division collaborates closely with clients like National Highways, focusing on carbon reduction in construction projects. Since carbon reporting is a standard requirement for these clients, our methodology is well-established and reliable, supported by a comprehensive and thorough carbon reporting process.

Carbon Reduction as a Standard Working Practice

- **Weekly Management Meetings:** Regular meetings are held to discuss sustainability and carbon reduction strategies.
- **Toolbox Talks:** We conduct sessions to brief the workforce on sustainability practices..
- **Briefings:** Frequent briefings ensure all employees are kept informed about sustainability initiatives and carbon reduction efforts.

Carbon Impact of Waste Streams

The below figures are estimated carbon savings of our management methods, when compared with sending waste to landfill.

Landfill = Waste in tonnes x Emissions factor for landfill
Actual = Waste in tonnes x Emissions factor for recycling/EFW

Carbon saving = Landfill emissions – Actual management emissions

The savings are calculated using Defra's emissions factors which vary per waste.

Waste Stream	Carbon Impact of Management	Estimated emissions (tonnes CO ₂ e)	Estimated saving (tonnes CO ₂ e)
General Waste	General waste that cannot be recycled is diverted to an Energy from Waste (EFW) plant. This prevents the release of greenhouse gases. Calculated using Defra's emissions factors.	0.70	56.97
Cardboard	Recycling cardboard reduces energy requirements of cardboard production by 75%. Recycled cardboard also reduces demand on virgin materials and water.	0.04	6.65
Food	Food waste is sent for anaerobic digestion. Biogas is captured and used for renewable energy preventing it from entering the atmosphere. The physical remnants are utilised as a biofertiliser.	0.05	4.25
Glass	Each tonne of glass recycled by URM Group saves 0.314 tonnes of CO ₂ emissions and 345kwh of energy. 1 tonne of recycled glass saves 1.2 tonnes of raw materials.	0.05	0.06
Wood	South West Wood process waste wood in a panel board mill. This enables them to produce products. Unsuitable materials are diverted as biomass fuel.	0.06	8.95
Plastics	Due to their slow decomposition rates the carbon saving for plastics is associated with the reuse of the material. This figure is calculated using Defra's emissions factors.	0.02	0.02
Metals	Our metals are recycled by EMR Group who are committed to carbon reduction throughout their work. This figure is calculated through Defra's emissions factors, and the actual carbon saving is expected to be much higher.	0.01	0.01
Total Estimated Carbon Saving			76.91 t CO₂e

Transport Emissions

Example: Tracking data on an artic unit shows total mileage associated with the event was 105miles, and data taken from the truck read a consumption figure of 6.33 mpg (or 1.39 miles per litre).

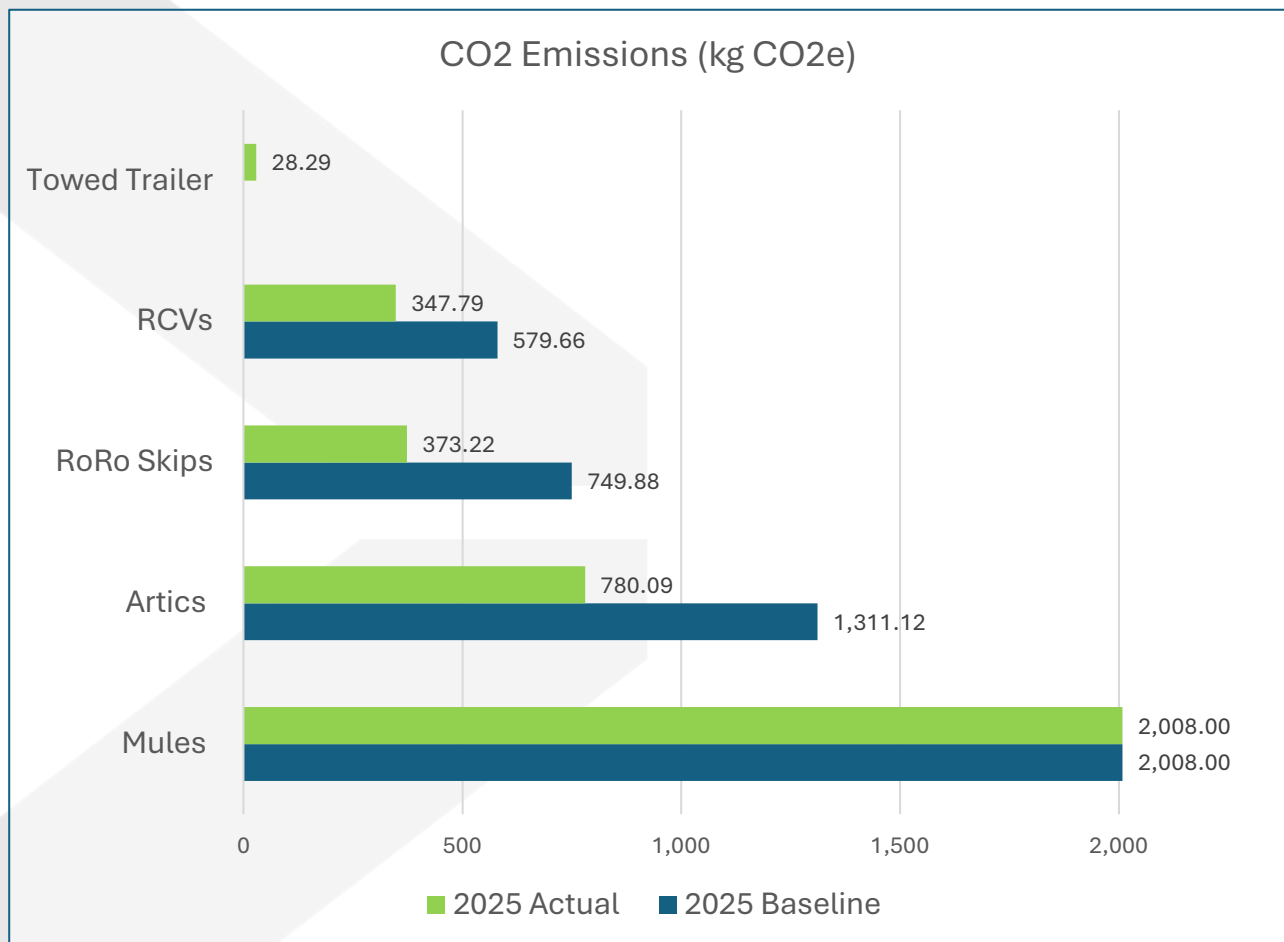
It therefore calculates its emissions as:

$$\begin{aligned}\text{Fuel use} &= \text{Distance} \div \text{Fuel Efficiency} \\ &= 105 \text{ miles} \div 1.39 \text{ mpl} \\ &= 75.54 \text{ litres}\end{aligned}$$

The UK emission factor for diesel is 2.51 kgCO₂eq/ltr, so;

$$\begin{aligned}\text{Total emissions} &= 75.54 \text{ litres} \times 2.51 \\ &= \underline{189.60 \text{ kgCO}_2\text{e}}\end{aligned}$$

Conversion factors taken from: gov.uk reporting conversion factors. Baseline data reflects transport emissions without electric vehicles and efficient route planning.



Transport Emissions Per Tonne of Waste

Waste capture increased in 2025 which has led to an overall increase in transport emissions related to the management of wastes. To compare year on year, this data has been standardized to reflect transport emissions associated with one tonne of waste.

CO2e per tonne = Transport emissions (kg CO2e) ÷ Tonnes of Waste

	2025 Baseline	2025	2024
Transport emissions (kg CO2e)	4,648.66	3,537.40	1,948.28
Waste tonnage	142.5 tonnes	142.5 tonnes	103.45 tonnes
Emissions per tonne of waste (kg CO2e)	32.62	24.82	18.83

This year we saw an increase in the use of our mules on site, likely due to the increased footfall and increased waste produced. The below transport emissions reflect all vehicles other than mules and is presented to highlight the improvements in our wider fleet.

Without Mules	2025 Baseline	2025	2024
Transport emissions (kg CO2e)	2,498.40	1,455.80	1,697.28
Waste tonnage	142.5 tonnes	142.5 tonnes	103.45 tonnes
Emissions per tonne of waste (kg CO2e)	17.53	10.22	16.40

Carbon Narrative

This carbon report covers the two most impactful components of the waste management activities conducted by MJ Church on behalf of the Royal Air Charitable Trust Enterprises and RIAT.

Our waste management practices already make a significant saving of carbon, and carbon equivalent, emissions across the work delivered. We are constantly reviewing opportunities for improvement, and work with our partnered waste facilities to ensure we are maximising our sustainability performance. We are in talks with our partners to achieve greater transparency and availability of data that we can pass on to our clients.

The addition of a second electric RCV to our fleet demonstrates our commitment to sustainability and carbon reduction. The ongoing expansion of electric vehicles and plant in our fleet continues, and we are already in talks to trial new electric mules with the intention to deploy them for RIAT 2026. Our use of mules on site are necessary for a safe, efficient service and are currently one of our best opportunities for further decarbonisation.

This year, MJ Church's Carbon Management System has been accredited to meet PAS 2080. As we continue to evolve our carbon reporting and analysis, we are expanding the breadth of data that we collate. This will provide us with better insights into our sustainability performance, and help to identify opportunities for further development. With this data we will be able to expand upon our reporting capabilities to provide greater transparency.

Our 2025 baseline figures below represent the expected carbon emissions of our activities, without mitigations. Our savings in transport emissions are from the use of electric RCVS, as well as efficient planning of driving routes and delivery of equipment between neighbouring events. The savings associated with waste management are due to our effective diversion from landfill and recycling rates.

	2025 Baseline	2025 Actual	Saving
Emissions from Transport (Tonnes CO ₂ e)	4.65	3.54	23.9%
Emissions from Waste Management (Tonnes CO ₂ e)	76.95	0.93	98.8%
Total Emissions (Tonnes CO₂e)	81.60	4.47	94.52%



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Years
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