Heathrow Strategic Planning Group (HSPG)

Waste-to-SAF Feasibility Study

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Prepared by:

Toby Prudden	Senior Energy Consultant
Lucy Champ ACMA CGMA	Senior Consultant – Finance and Carbon
Hazim Zaidi	Research and Development Programme Manager
Mila Gao-Ahlner	Energy and Carbon Consultant

Reviewed by:

Joe McQuillen	Associate Director – Energy

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1 List of Abbreviations

Abbreviation	Definition
AFF	Advanced Fuels Fund
ATJ	Alcohol to Jet
CAPEX	Capital Expenditure
CO_2e	Carbon Dioxide Equivalent
CRC	Community Recycling Centre
DEFRA	Department for Environment, Food and Rural Affairs
DESNZ	Department for Energy Security and Net Zero
EA	Environment Agency
EPR	Extended Producer Responsibility
ETS	Emissions Trading Scheme
EU	European Union
FT	Fischer-Tropsch
GHG	Greenhouse Gas
GIGA	Green Industries Growth Accelerator
GSP	Guaranteed Strike Price
HEFA	Hydroprocessed Esters and Fatty Acids
HMRC	HM Revenue & Customs
HSPG	Heathrow Strategic Planning Group
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
MJ	Megajoule
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
MW	Megawatt
NO_x.	Nitrogen Oxides
OPSS	Office for Product Safety and Standards
PFI	Private Finance Initiative
RCM	Revenue Certainty Mechanism
RDF	Refuse Derived Fuel
RTFO	Renewable Transport Fuel Obligation
SAF	Sustainable Aviation Fuel
SCC	Surrey County Council
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
WTS	Waste Transfer Station

2 Executive Summary

This study explores the potential for producing Sustainable Aviation Fuel (SAF) from municipal solid waste (MSW) within the Heathrow Strategic Planning Group (HSPG) area. It forms part of the Runway to Net Zero Pathfinder project, which is examining innovative approaches to accelerate aviation decarbonisation. By converting non-recyclable waste into low-carbon jet fuel, local authorities could reduce disposal costs, cut emissions, and contribute to the development of a domestic SAF industry.

2.1 Why Make SAF from Waste?

SAF is essential to achieving net zero in aviation and can deliver up to 80% lifecycle emissions savings compared to conventional jet fuel (Airbus, 2024). Most SAF to date has been made from used cooking oil and other bio-based feedstocks, but new approved pathways such as Fischer-Tropsch (FT-SPK) and Alcohol-to-Jet (ATJ-SPK) can convert residual MSW into drop-in jet fuel after drying and processing into Refuse Derived Fuel (RDF). These pathways are now approved under international fuel standards and eligible under the UK SAF Mandate.

At the same time, disposal costs for residual waste are increasing due to rising landfill tax and the planned inclusion of Energy from Waste (EfW) in the UK Emissions Trading Scheme. SAF production from residual waste offers an alternative route to benefit from otherwise discarded material, supporting both decarbonisation and circular economy objectives.

2.2 Summary of Key Findings

This study assessed the feasibility of producing SAF from residual MSW in the HSPG area, using Surrey as a representative case study due to the availability of detailed waste composition data and its role as a full member of the HSPG. The study explored the quantity and quality of available feedstock, the logistical and contractual implications of diverting residual waste, and the technical requirements of two SAF production pathways: Fischer-Tropsch (FT-SPK) and Alcohol-to-Jet (ATJ-SPK).

Key findings from the study highlight both the opportunity and the challenges involved in developing MSW-to-SAF production locally:

- Surrey generates **over 61,000 tonnes/year of RDF-equivalent waste**, including plastics, paper, card, wood, and textiles, which could yield between **5,000 and 21,000 tonnes/year of SAF**, depending on process and feedstock composition. This is equivalent to up to 0.3% of Heathrow's total annual jet fuel use, or 3% of its 2030 SAF target under the UK mandate.
- This is **below the 100,000-200,000 tonne/year threshold** of RDF typically required for a viable standalone MSW to SAF facility, highlighting the need for regional pooling.
- The wider HSPG area generates an estimated 330,000 tonnes/year of residual waste, equivalent to **~110,000 tonnes RDF** and up to 33,000 tonnes of SAF. Greater London generates around 2.5 million tonnes/year of residual MSW, with the potential to yield ~250,000 tonnes of SAF.
- **Transport distances within Surrey are feasible**. Major waste transfer stations already handle high volumes, and the largest flows could support bulk transport to a centralised SAF facility.

- **Waste contracts are a short-term constraint.** Most residual waste is tied up in long-term agreements to 2034, but a break point in 2027 for the PFI presents a potential strategic window for reallocation.
- Both FT-SPK and ATJ-SPK pathways are recognised in the literature as technically viable for converting MSW into SAF. **FT-SPK is generally considered more mature and tolerant of mixed feedstocks**, including plastics, while **ATJ-SPK may offer higher yields from biogenic materials** but faces greater eligibility constraints under current certification frameworks.
- **Environmental benefits are substantial.** SAF produced from Surrey's residual MSW is estimated to result in process-stage emissions of **249 kgCO_2e per tonne of MSW**, compared to **379 kgCO_2e per tonne** for EfW incineration, as shown in Figure 2-1 and Figure 2-2 below. This represents a **34% emissions reduction** on a like-for-like basis within the defined emissions boundaries.

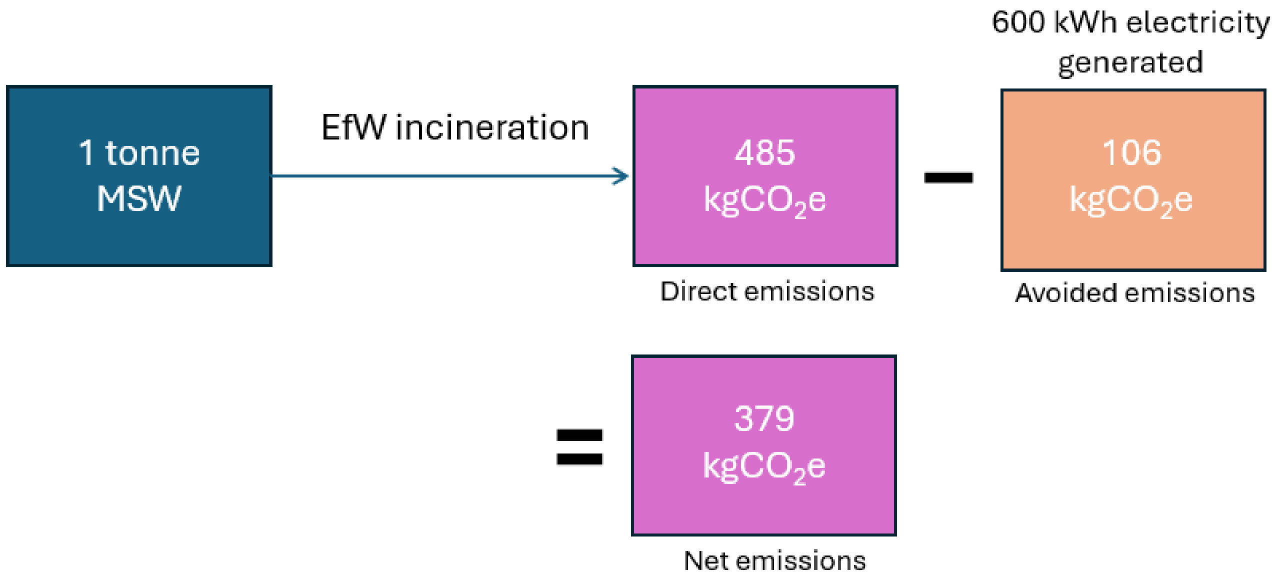


Figure 2-1: Energy from Waste Incineration Emissions

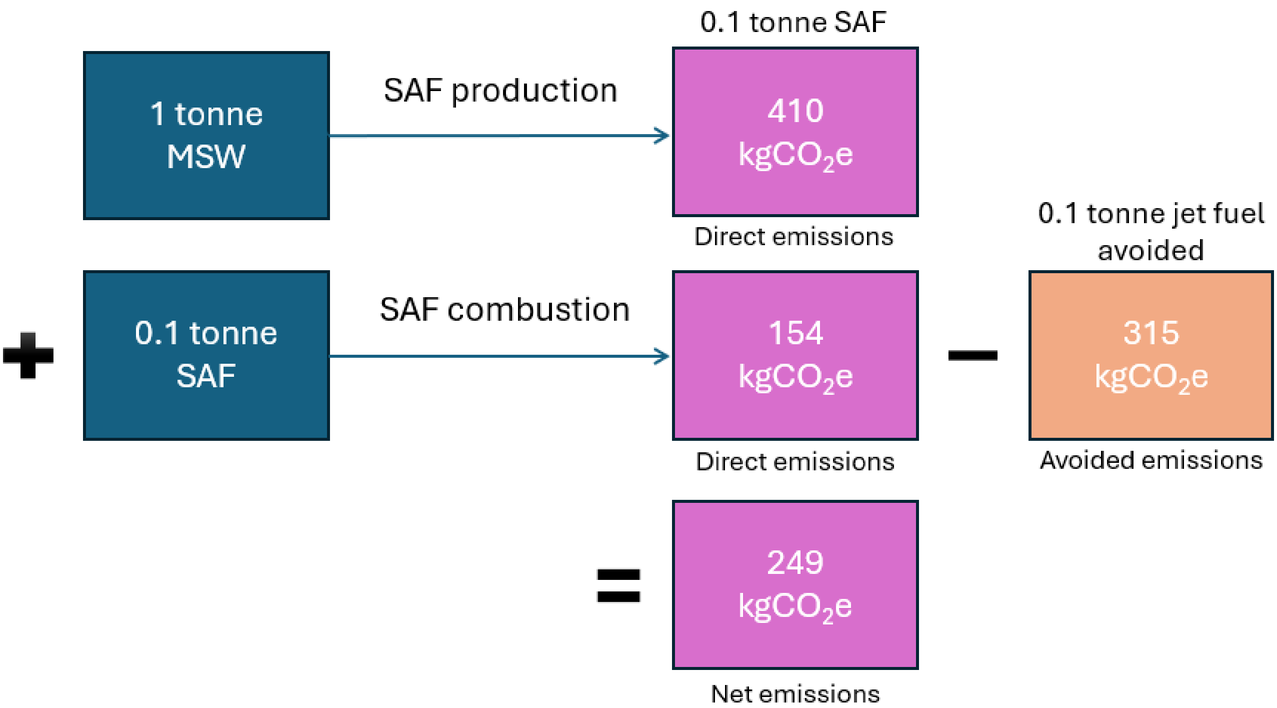


Figure 2-2: SAF Production (FT-SPK) and Combustion Emissions

2.3 Conclusions

This study highlights a promising opportunity to explore SAF production from residual waste within the HSPG area. While Surrey alone does not generate enough feedstock to support a commercial-scale SAF facility, the wider HSPG region and Greater London offer sufficient volumes to meet minimum scale thresholds and support investment in production capacity.

Key enablers will include feedstock access, hydrogen and electricity supply, land availability, and regulatory clarity, particularly around SAF certification for plastic-rich waste. As disposal costs rise and the SAF market matures, there is a strong rationale to further explore MSW as a strategic feedstock for SAF production in the region.

A summary of the main opportunities and constraints around developing a MSW to SAF facility in the HSPG area is provided in Table 2-1 below.

Opportunities	Constraints
Large volumes of residual MSW generated within short transport distances	High land values and development constraints around Heathrow
Co-location near Heathrow supports efficient SAF distribution into airport supply	Long-term waste contracts may limit near-term feedstock availability
Potential to repurpose existing EfW or waste transfer infrastructure	MSW-to-SAF technologies not yet widely deployed at commercial scale
Supports compliance with UK SAF mandate and reduces reliance on fossil jet fuel	Project delivery would require multi-stakeholder alignment across boroughs
Alignment with circular economy principles and landfill diversion goals	Requires access to low-carbon hydrogen and upgraded electricity/gas infrastructure

Eligible for emerging SAF incentives, mandates, and funding schemes	Risk of delays due to permitting, planning, or local opposition
Potential to create regional investment and skilled green jobs	High fossil content in plastic-rich waste may affect SAF certification or sustainability classification
Ability to displace EfW incineration, whose carbon intensity remains significant and will soon be subject to UK ETS penalties	SAF production emissions highly sensitive to feedstock quality, process efficiency, and attribution assumptions
Declining value of EfW-generated electricity as the UK grid decarbonises	SAF plants require major upfront investment and take longer to develop than conventional waste treatment options
SAF production offers a carbon benefit of ~34% compared to EfW disposal route	Stricter waste policies and higher recycling targets may reduce suitable residual waste, risking long-term supply for SAF

Table 2-1: Opportunities and Constraints of Using MSW to Produce SAF in the HSPG Area

2.4 Recommendations and Next Steps

To build on the findings of this study and support the potential development of MSW-to-SAF production in the HSPG area, the following actions are recommended:

- Initiate early dialogue with local authorities, waste contractors, SAF developers, and Heathrow to explore delivery models and align long-term interests.
- Refine projections for residual MSW quantities and composition across the HSPG and neighbouring areas. Review contractual availability and future waste infrastructure plans.
- Commission a site-specific feasibility study to identify and safeguard viable SAF facility locations. This should assess planning and zoning suitability, potential for co-location with existing waste or energy infrastructure, hydrogen and electricity supply options, grid connections, and indicative capital costs.
- Engage with government to clarify SAF eligibility rules for waste-derived feedstocks (including plastics), and ensure alignment with the evolving UK SAF mandate, emissions trading, and waste hierarchy policy.

These actions will help position the HSPG area to capitalise on the growing policy and commercial momentum behind Sustainable Aviation Fuel production in the UK.

3 Introduction

This study explores the potential to produce Sustainable Aviation Fuel (SAF) from municipal solid waste (MSW) within the Heathrow Strategic Planning Group (HSPG) area. It forms part of the Runway to Net Zero Pathfinder project, which aims to identify innovative, place-based solutions to decarbonise aviation and accelerate delivery of the UK Jet Zero Strategy.

Local authorities in the HSPG area collectively manage hundreds of thousands of tonnes of residual waste each year. At present this waste is typically incinerated, which generates electricity but also greenhouse gas emissions, and is set to incur rising costs. With the planned extension of the UK Emissions Trading Scheme (UK ETS) to Energy from Waste (EfW), and ongoing pressure to divert material from landfill, the cost of waste disposal is set to increase significantly. SAF production presents an opportunity to turn this challenge into value. By redirecting suitable waste fractions towards fuel production, local authorities could reduce disposal costs, generate economic value, and contribute to wider net zero goals.

This report assesses the technical, policy, contractual and environmental factors influencing the feasibility of SAF production from MSW in the region. Using Surrey as a representative case study, it evaluates the availability of suitable feedstocks, explores the compatibility of existing infrastructure, and considers the emissions implications associated with MSW-to-SAF pathways.

3.1 Sustainable Aviation Fuel Pathways

Aviation accounts for 2-3% of global anthropogenic greenhouse gas (GHG) emissions (Airbus, 2024) and approximately 7% of UK GHG emissions (Tyers, Burnett, Stewart, & Hinson, 2025) a share expected to grow as other sectors decarbonise. SAF is a key tool for reducing the climate impact of air travel, with lifecycle GHG savings of up to 80% compared to conventional jet fuel (Airbus, 2024). Critically, SAF is a drop-in fuel that can be blended with fossil kerosene and used in existing aircraft and airport infrastructure without modification.

There are three main pathways to produce SAF (DfT, 2024):

- **Hydroprocessed Esters and Fatty Acids (HEFA)** - derived from waste oils and fats such as used cooking oil.
- **Non-HEFA (inc. Fischer–Tropsch and Alcohol-to-Jet)** - derived from wastes and residues such as MSW, through thermochemical or catalytic processes.
- **Power-to-liquid (e-SAF) -** produced by combining green hydrogen with captured CO_2 using renewable electricity, this pathway is currently at an early stage of development.

This study focuses on MSW-compatible SAF pathways, primarily Fischer-Tropsch (FT-SPK) and Alcohol-to-Jet (ATJ-SPK), which are approved under international fuel standards and supported by the UK SAF Mandate. As of mid-2024, eleven SAF projects were in development across the UK, including several based on these pathways (Innovate UK Business Connect, 2025), with only one operational, highlighting the need for further local delivery models.

4 Policy Review

This report reviews the following six policies which we have identified as relevant: Jet Zero Strategy, the SAF Mandate, UK Emission Trading Scheme, Producer Responsibility Regulations, Simpler Recycling, and Landfill Tax.

4.1 Objectives of the Policy Review

The objectives of this policy review are:

1. To inform the remainder of the study on the viability of MSW-to-SAF in the HSPG region.
2. To assess the policies that might underpin the supply and demand factors on waste. These insights will feed into the feasibility study.
3. To understand any impacts policies could have on the economic implications of SAF.

4.2 Jet Zero Strategy

The Jet Zero Strategy, published in July 2022 by the DfT, outlines the UK's approach to decarbonising the aviation industry while preserving its economic and connectivity benefit. It is the aviation pillar of the UK's broader net zero strategy and sets the vision to achieve net zero for domestic fights and all airport operations in England by 2040, and total aviation net zero by 2050 (DfT, 2022).

Some of the key milestones besides those already mentioned include (DfT, 2022):

- At least five commercial-scale UK SAF plants under construction by 2025.
- UK SAF Mandate introduced by 2025.
- Zero emission routes connecting different parts of the UK by 2030.
- In-sector interim target of 35.4 $MtCO_2e$ by 2030.
- At least 10% of SAF in UK aviation fuel mix by 2030.
- First large zero emission commercial aircraft to enter service by 2035.

4.2.1 SAF Scale-up

Three key strategic goals of the Jet Zero Strategy are directly related to SAF;

First, the Jet Zero Strategy is a driving force behind the introduction of the SAF Mandate, which will be discussed in more detail in Section 4.3.

Secondly, the Jet Zero Strategy aims to have at least five commercial-scale UK SAF plants under construction by 2025. The strategy document, published in July 2022, outlines the UK Government's commitment to support the development of a domestic SAF industry with £180 million of new funding (DfT, 2022). A central element of this commitment is the Advanced Fuel Fund, launched alongside the strategy, which has competitively allocated £135 million to support advanced fuel projects through to March 2025. A further £63 million in funding is being made available through the latest application window, which closed on 28th of March 2025. The successful projects are expected to be announced in July 2025, and the support is granted until March 2026 (DfT, Ricardo, ERM, 2025). At present, it has not been announced whether there will be additional rounds of funding beyond the latest allocation.

Lastly, the Jet Zero Strategy sets out an ambition of at least 10% of SAF in the UK jet fuel mix to be achieved by 2030 (DfT, 2022).

These goals significantly improve the market conditions for SAF scale-ups since they strengthen SAF's position as a cornerstone of aviation decarbonisation.

4.2.2 Implications for the Runway to Net Zero Pathfinder Project

The Jet Zero Strategy identifies SAF as a non-optional requirement to meet the net zero targets of the aviation industry which provides increased confidence to investors in long-term demand for SAF.

Potential risk and limitations resulting from the Jet Zero Strategy include that it currently lacks price floors to support commercial-scale projects, which may deter investment due to high upfront CAPEX. Additionally, the SAF targets for 2025 and 2030 are ambitious due to current infrastructure gaps and low supply availability.

However, it is worth noting that waste-to-SAF is explicitly supported in the strategy. Thus, the Jet Zero Strategy acts as a holistic framework that builds confidence for SAF investors.

4.3 SAF Mandate

The SAF Mandate is a policy designed to secure demand for SAF and is a central component of the UK Government's strategy to decarbonise the aviation sector. It imposes a legal obligation on fuel suppliers in the UK to gradually increase the proportion of SAF they supply over time. The scheme is overseen by an Administrator within the DfT and separates SAF from the Renewable Transport Fuel Obligation (RTFO), making it no longer possible for fuel suppliers to claim support for SAF through RTFO as of 1 January 2025 (DfT, 2024).

Suppliers receive certificates for the SAF they provide, which are issued in proportion to the level of GHG emissions reductions achieved by the fuel. Before receiving certification, suppliers must be independently verified by a recognised third-party organisation. DfT has published a list of parties with appropriate expertise.

The three types of SAF outlined in the introduction offer varying levels of GHG emission savings. However, the SAF Mandate requires a minimum GHG emissions reduction of 40% across all SAFs.

The SAF Mandate is expected to deliver up to 6.3 mega tonnes of carbon savings per year by 2040 (DfT, 2024).

4.3.1 Obligations of the SAF Mandate

Fossil aviation turbine fuel ('avtur') is required to meet a mandate that ensures its carbon intensity reduces over time throughout the UK. In contrast, fossil aviation gasoline ('avgas') and fossil hydrogen are not obligated (DfT, 2024), meaning that the suppliers of those fuels do not have a legal requirement to blend in low carbon alternatives.

The SAF Mandate includes two obligations (DfT, 2024):

1. The **main obligation**, which covers HEFA and non-HEFA fuels.
2. The **power-to-liquid obligation**, aimed at accelerating the development of power-to-liquid fuels that are less reliant on feedstocks which may be or become scarce.

Both obligations stated above will include a buy-out mechanism: besides applying for certification to demonstrate that their fuel is eligible for the SAF Mandate and thus sustainable, the buy-out mechanism will provide a method of demonstrating compliance when fuel suppliers are unable to meet the SAF obligations. This mechanism will enable suppliers to pay the government a penalty for non-compliance, with the fee set at a specific price designed to encourage the adoption of SAF over the buy-out option.

If a fuel supplier manages to secure more certifications than needed to be compliant, it is allowed to trade the surpluses with other suppliers (DfT, 2024), adding flexibility and the potential for additional revenue streams for SAF producers.

4.3.2 Implementation Timeline

The SAF Mandate came into force on the 1st of January 2025 (DfT, 2025) with annual escalating targets through to 2040 and beyond: In 2025, the main obligation is set at 2% of the total UK jet fuel demand, meaning that the remaining 98% can still be comprised of fossil fuel. If the goal of the 2% is achieved, approximately 230,000 tonnes of SAF would need to be supplied to fulfil the demand (DfT, 2024). The required usage of SAF then increases linearly to 10% in 2030 and 22% in 2040. Beyond 2040, the obligation will remain at 22% until the increased demand can be supplied with higher certainty (DfT, 2025) since SAF availability is a challenge today.

In comparison, the power-to-liquid obligation is expected to start in 2028 at 0.2% of total UK jet fuel demand, increasing to 3.5% in 2040.

To promote the development of the two more advanced fuels, which are non-HEFA and power-to-liquid, the maximum share of HEFA in the SAF demand is set at 100% in 2025, gradually decreasing to 71% by 2030 and 35% by 2040 (DfT, 2024). This regulation also alleviates potential pressure on the food supply industry, as HEFA, a fuel derived from oils or fats such as used cooking oil, may otherwise lead to encouraged waste production or have negative impact on food security and commodity prices if widely used in SAF.

The planned implementation timeline of the SAF Mandate is illustrated in Figure 4-1.

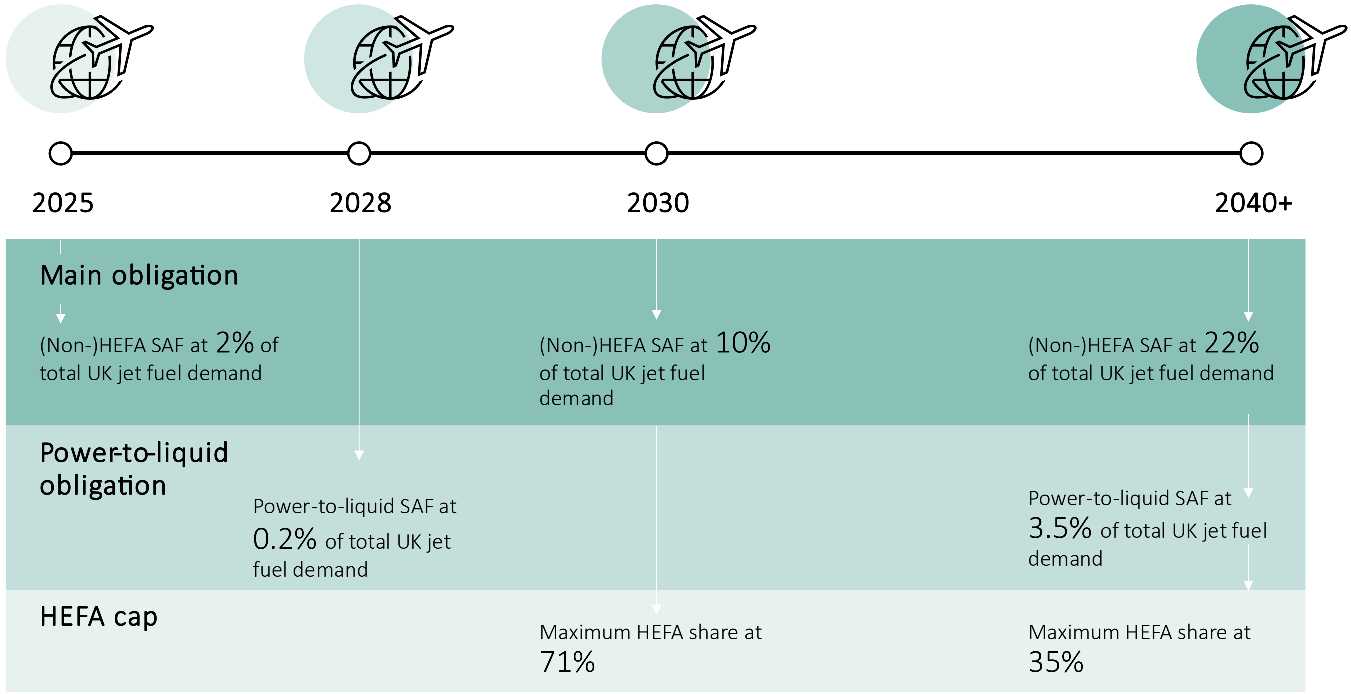


Figure 4-1: Timeline of the SAF Mandate

4.3.3 Criteria for Receiving Certification

Low carbon avtur, low carbon avgas and low carbon hydrogen are all eligible for the certification, although avgas and hydrogen are not obligated to meet the SAF Mandate. By allowing low carbon avgas and hydrogen to receive certification, the policy essentially rewards innovation and early adoption across all aviation fuel types, since suppliers of avgas and hydrogen can benefit financially from decarbonisation through certification trading.

Besides meeting the relevant technical specifications (e.g., Jet A1), eligible SAF must be made from sustainable wastes or residues derived from the following sources (DfT, 2024):

- Biomass (e.g., used cooking oil).
- Fossil wastes that cannot otherwise be avoided, reused or recycled.
- Renewable or nuclear power.

Thus, SAF derived from primary feedstocks such as food or energy crops is not permitted.

Similarly, when hydrogen is used as a fuel precursor or the final fuel, it must be biohydrogen sourced from one of the following: residual wastes or residues (e.g., manure), recycled carbon fuel hydrogen (e.g., industrial waste gases), or hydrogen produced using low-carbon energy sources (e.g., wind energy).

In addition to fulfilling the requirements on its source, SAF must achieve a minimum GHG emissions reductions of 40% relative to a fossil fuel comparator of 89gCO_2e/MJ to be awarded a certification.

In summary, to qualify for certification, SAF needs to fulfil its relevant technical specifications, originate from a permitted feedstock, and demonstrate a minimum GHG reduction of 40%.

4.3.4 Revenue Certainty Mechanism

The UK Government has confirmed that it will introduce a Revenue Certainty Mechanism (RCM) for Sustainable Aviation Fuel (SAF), designed to de-risk investment and support the development of a UK-based SAF industry, with the Sustainable Aviation Fuel Bill 2024-25 currently under consideration in parliament (Hutton, 2025). The chosen model is a Guaranteed Strike Price (GSP) scheme, similar in design to the Contracts for Difference (CfD) mechanism used in low-carbon electricity. Under this approach, SAF producers will bid for contracts which guarantee a minimum price (strike price) for fuel sold over a fixed period.

If the market price falls below the strike price, producers will be compensated for the shortfall by a government-backed counterparty; if the market price exceeds the strike price, producers will return the difference. The scheme will initially focus on second- and third-generation SAF, excluding fuels derived from used cooking oil or tallow (HEFA).

The first allocation round is expected by end of 2026, with government committing to ongoing dialogue with industry to refine the scheme's design, particularly regarding contract size, pricing parameters, and allocation process. The RCM will be industry-funded, with levies placed on aviation fuel suppliers subject to the SAF mandate. This is intended to spread costs across the fuel supply chain and limit direct impact on airfares, although some cost may be passed on to passengers.

The mechanism has been broadly welcomed by airlines, investors, and SAF developers, with support for its role in enabling capital investment and project finance. However, organisations such as Climate Catalyst have called for stronger incentives for third-generation SAF (e.g. e-fuels), and for the scheme to be time-limited to ensure focus on cost reduction and innovation.

4.3.5 Implications for the Runway to Net Zero Pathfinder Project

Looking at the eligibility criteria for the certification, it is clear that MSW aligns well with the feedstock criteria. As for the economic impact, the SAF Mandate provides a predictable demand for SAF which is expected to raise until 2040, thus improving the investment case for MSW-to-SAF facilities, especially since the share of HEFA is capped in the main obligation. This policy also makes it economically attractive to be a leader in SAF production, as the ability to trade generated certifications provides an additional revenue stream.

The introduction of the RCM marks a key policy shift from demand-side mandates to long-term revenue support for SAF production. For the Runway to Net Zero Pathfinder Project, this improves the investment case for UK-based SAF from municipal solid waste by reducing market risk and increasing financial viability.

The scheme's focus on advanced, non-HEFA fuels aligns well with waste-based SAF pathways such as FT-SPK and ATJ. If delivered on time, it could help attract private investment in first-of-a-kind facilities within the HSPG region. However, there are still risks around implementation delays, complex levy design, and ensuring the mechanism supports UK production rather than imported fuels.

Ongoing monitoring and engagement with government and industry will be important to ensure the RCM provides meaningful support for SAF from residual waste and contributes to regional decarbonisation goals.

4.4 UK Emissions Trading Scheme

The UK Emissions Trading Scheme (ETS) is a carbon pricing system launched in January 2021 to replace UK's participation in the EU Emissions Trading Scheme following Brexit. The scheme is designed to help the UK meet its climate goals by capping the total amount of GHGs that can be emitted by sectors covered by the scheme and allowing businesses to trade emission allowances within the cap.

The ETS currently covers combustion of fuels in installations where on-site thermal input exceeds 20 MW, excluding the incineration and hazardous or municipal waste. However, an expansion to the waste sector is intended. The ETS also applies to aviation, including UK domestic flights, flights between the UK and Gibraltar, and flights departing the UK to European Economic Area states. Moreover, there are simplified provisions for hospitals, small emitters and ultra-small emitters (DESNZ, 2024).

4.4.1 Future Trajectory of ETS

The UK ETS Authority has set out steps in line with net zero commitments. The following bullet points are taken from the government's long-term pathway for the UK Emissions Trading Scheme (DESNZ, 2023):

- From 2024, the UK ETS cap will be aligned with the net zero trajectory. The number of carbon allowances for companies to buy at auction in 2024 will be limited to 69 million – 12.4% fewer than in 2023, and their lowest-ever level. By 2027, this will fall to around 44 million – a 45% reduction against 2023 – before reaching around 24 million by 2030.
- DESNZ have announced initial expansion of the UK ETS: Wider coverage of emissions by sectors already in the scheme, including coverage of CO_2 venting by the upstream oil and gas sector from 2025; expansion to domestic maritime emissions in 2026; to Energy from Waste and waste incineration in 2028.

4.4.2 Extension to Energy from Waste (EfW)

The UK ETS suggests that the expansion of ETS to the waste sector will start from 2028. This includes a two-year transitional phasing period, from the 1st of January 2026 to the 31st of December 2027.

In the consultation for UK Emissions Trading Scheme Scope Expansion: Waste (ETS Authority, 2024) it is highlighted that the regulated activities that intended to be included in this sector extension are the incineration and combustion of waste, and other energy recovery of waste. It specifies that waste-to-fuel activities such as the production of SAF will be included within the scheme. However, their position is to include the direct emissions associated with the production of these fuels, but not further life-cycle emissions from their outputs. As some of these technologies are still emerging and are not yet proven at large scale, the UK ETS authority will continue to work with stakeholders to understand the implications of this position and will review it if necessary.

4.4.3 Implications for the Runway to Net Zero Pathfinder Project

As the consultation has not yet been finalised, it is difficult to determine its effects on SAF and its economic viability. However, by assigning a carbon cost to incineration, the government is shifting the economic balance toward more circular waste treatment approaches. Once in-scope, EfW operators will either absorb or pass on these costs, prompting strategic decisions about investment and technology upgrades, or diversion strategies. Because many local authorities are locked into long-term contracts, these increased carbon costs may be passed through to councils.

The ETS extension could also lead to changes in waste hierarchy decisions, where incineration is deprioritised in favour of recycling, reuse, or fuel production pathways such as SAF that offer better lifecycle emissions performance. In order to reduce exposure to ETS costs, local authorities responsible for managing significant volumes of municipal waste will also be incentivised to divert plastics and other non-biogenic materials out of the residual waste stream. There is also the possibility of 'carbon leakage', where waste is exported to jurisdictions with weaker regulations.

There are also implications for carbon accounting, as facilities will need to implement or improve systems for measuring and reporting biogenic vs fossil-derived CO_2 emissions (only fossil-derived CO_2 will be liable for allowance surrender). This is likely to introduce new data and compliance burdens on EfW operators and regulators alike.

In summary, the potential positive economic impact of this policy is the improvement of MSW-to-SAF's relative competitiveness to other energy recovery methods from waste, while the main risk is its delayed economic impact and potential encouragement of carbon leakage, adding to feedstock uncertainty.

4.5 Producer Responsibility Regulations

Producer Responsibility Regulations aim to ensure that businesses involved in manufacturing, importing, and selling products are accountable for the environmental impact these products have at the end of their life cycle. These regulations require business to minimise the waste generated by their products and promote their reuse, for instance by designing products in a way that reduces material usage. Additionally, businesses must ensure that the waste is properly treated and that recovery and recycling targets for the used materials are met (DBT, EA, OPSS, 2025).

4.5.1 Extended Producer Responsibility for Packaging

The Extended Producer Responsibility (EPR) for Packaging defines the recycling responsibilities for UK organisations, if the following criteria apply (Defra, EA, 2025):

- The organisation is an individual business, subsidiary or group (but not a charity).
- It has a turnover of £1 million or more.
- It is responsible for importing or supplying more than 25 tonnes of packaging to the UK market in the previous calendar year, or it carries out any packaging activities.

This new regulation, last updated on the 3rd of April 2025, will require qualifying organisations to monitor and report on the packaging that they import or create. Additionally, it requires 'large' organisations to pay fees in relation to their packaging waste. A 'large' organisation is classified by having an annual turnover of £2 million or more and supplying or importing more than 50 tonnes of packaging in the UK. Both conditions must apply for any given year to be categorised as 'large'. These organisations must report on their supplied packaging in 2024. Afterwards, 'large' organisations are required to report data every six months, whereas 'small' organisations must do so annually (Defra, EA, 2025).

From October 2025, 'large' organisations will be obligated to pay waste management fees, also known as waste disposal fees. The 2024 data will be used to determine the invoice amount. The current illustrative base fees have been calculated based on local authority costs to dispose household packaging waste (Defra, 2024). Table 4-1 shows the illustrative base fees by material as of the latest update in September 2024.

Material	Lower (£/tonne)	Intermediate (£/tonne)	Higher (£/tonne)
Aluminium	320	405	605
Fibre-based composite	355	450	565
Glass	110	175	215
Paper and card	135	190	250
Plastic	360	425	520
Steel	220	265	330
Wood	145	240	340
Other	180	205	240

Table 4-1: Illustrative Packaging Extended Producer Responsibility Base Fees for 2025 to 2026 for All Packaging Materials

The government is currently gathering additional data on local authority costs for managing this waste, with the goal of finalising the figures in time for the start of invoicing in October 2025 (Defra, EA, 2025).

4.5.2 Implications for the Runway to Net Zero Pathfinder Project

The core principle of the Producer Responsibility Regulations is the 'polluter pays' concept. As a result, it is expected to impact the amount of waste, as suppliers will likely adjust their products to incorporate more recyclable materials in order to minimise potential costs. In particular, EPR is expected to reduce overall packaging waste which may lower the volume of such waste entering the MSW stream.

Furthermore, the regulations may affect the composition of MSW available for SAF production, especially since non-recyclable plastics are a key component of MSW-derived SAF feedstock. As non-recyclable plastic is phased out, residual MSW may become less carbon-rich which could affect yield and GHG emitted through SAF production.

A potential positive implication of these regulations is that due to their requirements on reporting they may lead to higher data accuracy and better feedstock predictability.

4.6 Simpler Recycling

The Simpler Recycling policy, which came into force on 31st of March 2025, aims to make recycling easier for people in England by reducing the number of waste bins from seven down to four, with those four being (Defra, 2024):

- Residual (non-recyclable) waste.
- Food and garden waste.

- Paper and card.
- All other dry recyclable materials.

Moreover, England also hopes to improve the consistency of waste and recycling services provided to households across councils through this scheme, avoiding 'postcode lottery', and to encourage the recycling rates to increase which have stagnated at around 45% since 2015 (Defra, 2024).

For food waste in Surrey, Simpler Recycling is expected to have a limited direct effect when compared to other local authorities, as weekly separate food waste collections are already in place across the county. However, behavioural improvements and increased participation could still lead to a further reduction in food waste in the residual stream. Current data suggests that food accounts for around 28% of Surrey's residual MSW - this may fall to approximately 20% over time as service uptake improves and communications are standardised.

4.6.1 Workplaces

Simpler Recycling requires all workplaces in England to provide bins for and to separate dry recyclable materials, food waste, and residual waste. Microbusinesses, defined as firms with fewer than ten full-time equivalent employees, have until March 2027 to implement the required changes.

Any business or workplace generating waste similar in composition to household waste must follow these rules across their operations, including staff kitchens. This applies to various non-domestic premises such as offices, retail, hospitality, educational institutions, healthcare facilities, care homes, charities, places of worship, penal institutes, charity shops, residential hostels, and public meeting venues. Local authorities may also be included as workplaces required to follow these rules (Defra, 2025).

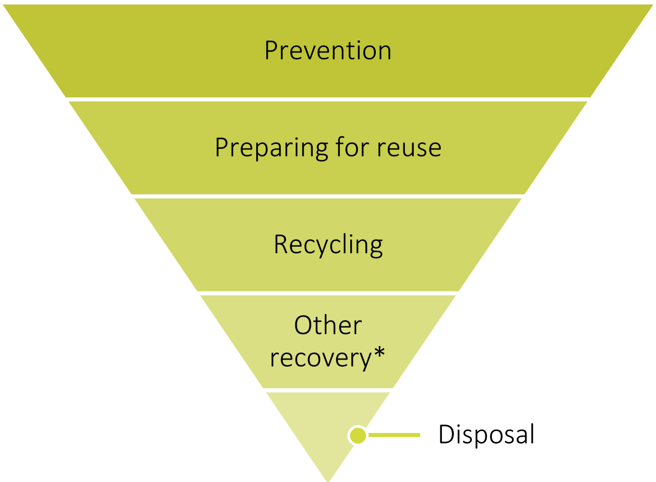
4.6.2 Implications for the Runway to Net Zero Pathfinder Project

The standardisation of waste collection could potentially lead to more consistent and comparable waste data across England, as collecting the same set of bins nationwide may facilitate better tracking and reporting. Thus, this policy could support the creation of SAF from waste by enabling the feedstock to be identified easier through better data on waste flows.

Moreover, the Simpler Recycling policy is expected to change the composition of MSW as the improved recycling rules may reduce the volume of recyclable materials in residual waste. It may also improve the quality and homogeneity of residual waste by removing high-moisture food content and low-value mixed recyclables, particularly plastic films and cartons. This would help stabilise the feedstock and improve process efficiency in SAF production, though the overall carbon content may be slightly reduced as more packaging is removed.

4.7 Landfill Tax

The UK Landfill Tax is a levy on the disposal of waste to landfill designed to encourage waste reduction and the use of more sustainable waste management practices by internalising the environmental cost of landfill. This fiscal policy instrument was introduced in 1996 (HMRC, 2024). The tax supports the UK's waste hierarchy together with the other waste policies mentioned (Defra, 2011), and has become a key lever in diverting waste towards recycling, reuse and energy recovery



* Other recovery includes energy recovery such as incineration and conversion to fuels (e.g., conversion to SAF)

Figure 4-2: The Waste Hierarchy

methods such as incineration. The waste hierarchy as adopted in the UK is shown in Figure 4-2.

The tax is chargeable by weight and there are two rates, with the lower rate applying to materials that are non-hazardous, have low potential for GHG emissions and are relatively non-polluting. The standard rate covers all remaining waste (HMRC, 2024). Examples of waste materials that would classify for the lower rate include naturally occurring rocks and soils.

4.7.1 Increased Rates from April 2025

As of April 2025, the standard rate of Landfill Tax increased to £126.15 per tonne, and the lower rate rose to £4.05 per tonne, which corresponds to a percentage increase of approximately 22% and 23% respectively.

With the increase in costs for waste disposal, this may incentivise waste producers to seek alternative methods such as recycling, composting or waste-to-energy processes which may indirectly benefit SAF production.

4.7.2 Implications for the Runway to Net Zero Pathfinder Project

Overall, the increase in Landfill Tax is likely to create a more favourable environment for the development of SAF. By making it more expensive to dispose of waste in landfills, it may encourage the development of sustainable alternatives, including the production of SAF from waste.

Moreover, there is a dual climate benefit in diverting waste from landfill to SAF production, as methane from decomposing waste in landfill is avoided, and fossil jet fuel is displaced.

However, it is important to keep in mind that the Landfill Tax does not directly subsidise or support SAF, which means that the economic attractiveness of SAF relies on its relative competitiveness compared to other Energy from Waste options. Furthermore, waste diverted from landfills is likely to be highly heterogeneous which may affect the economics of a SAF project. Additionally, increased tax rates may contribute to higher rates of illegal disposal, ultimately lowering the volume and quality of waste that can be used as SAF feedstock.

4.8 Conclusion

The UK government's policy landscape is evolving rapidly to support the decarbonisation of aviation and the shift to a circular, low-waste economy, presenting both opportunities and challenges for SAF from waste production.

The introduction of the SAF Mandate, underpinned by the Jet Zero Strategy, provides a long-term demand signal, and a robust regulatory framework, improving the economic case for SAF. These policies recognise the value of SAF derived from waste, including MSW, for its dual climate benefits: avoiding fossil fuel use and reducing landfill emissions. However, despite a globally strong policy environment for SAF from waste, the absence of price support remains a critical gap. To address this, the government has confirmed plans to introduce a Revenue Certainty Mechanism (RCM) by the end of 2026 to provide long-term price stability and reduce investor risk. Until the RCM is in place and operational, commercial viability for early SAF projects may remain challenging.

At the same time, a range of waste sector reforms such as the ETS extension to EfW, EPR, Simpler Recycling policies and the increase in Landfill Tax are reshaping the availability, composition and economics of waste. The greater regulation of the categorisation of waste and the increased consistency of collection services may help the accessibility of waste needed in SAF creation. For instance, the Landfill Tax encourages sustainable utilisation of waste by making landfill disposal more expensive. However, some of the new policies may reduce the volume and quality of waste over time and may contribute to carbon leakage or illegal dumping, creating uncertainty for feedstock planning for SAF in the long-term. This could lead to SAF created from nuclear or renewable power (i.e. power-to-liquid) being prioritised over SAF derived from waste.

The ETS extension could significantly impact the economics of SAF production from waste. On one hand, rising costs for EfW incineration, driven by higher ETS-related fees, could make the MSW-to-SAF pathway more attractive by comparison. On the other hand, SAF derived from waste may also face increased costs due to emissions generated during the production of SAF potentially being subject to the ETS extension. However, direct emissions from flights using SAF are likely to be excluded from an airline's ETS obligations, as they would be considered as further life-cycle emissions and are thus not covered by the ETS. This could create incentives for airlines participating in the ETS to purchase SAF, even at a higher cost. Further research may be needed to determine whether the costs associated with direct emissions from the flight are higher or lower than those related to SAF production emissions.

In summary, the waste streams identified by the Heathrow Strategic Planning Group could become a valuable asset for local authorities, reducing costs associated with disposal such as Landfill Tax while also redirecting waste towards SAF production, potentially generating additional revenue. MSW-to-SAF also supports local and national net zero targets by offering a recovery pathway for waste and a sustainable fuel for aviation. Given recent policy developments, it is essential to assess whether future waste supply volumes justify new long-term commitments to SAF production.

5 Initial Technical Feasibility

In this section we review the current and forecast constraints and requirements for Sustainable Aviation Fuel (SAF) production from Municipal Solid Waste (MSW), with the aim of assessing the technical feasibility of MSW-to-SAF conversion based on the existing amount and composition of MSW within Surrey County and taking into account local considerations including infrastructure and fuel requirements.

Surrey is used as a 'test bed' for this project as it offers a representative example of residual waste generation in the region. It was selected due to the availability of detailed, recent waste composition data, developed through earlier analysis of the potential impact of extending the UK Emissions Trading Scheme (ETS) to Energy from Waste (EfW). This makes Surrey a strong starting point for assessing SAF production feasibility, with insights that can be scaled or adapted across the wider Heathrow Strategic Planning Group (HSPG) area, of which it is a full member.

In determining the technical feasibility for MSW-to-SAF we have investigated waste streams and volumes within Surrey, compared the requirements of two ASTM-approved SAF production methodologies (and a further 'maximum yield' theoretical pathway), calculated the potential quantities of SAF which could be produced using current and future MSW, and reviewed the location of key waste management sites and waste transportation routes within the region.

In addition, to gather more information we also carried out three 1-1 interviews with key stakeholders including local waste officers and experts in SAF production, which enabled us to better understand the local waste system including expected changes in waste composition and what contractual arrangements are in place, as well as industry views on SAF production in the UK.

5.1 Waste Quantities, Composition and SAF Production Potential

This section assesses the quantity and composition of residual MSW in Surrey and evaluates its potential for conversion into SAF. It incorporates recent waste data, policy-driven scenario modelling, and indicative yield calculations for three SAF pathways: Fischer-Tropsch (FT), Alcohol-to-Jet (ATJ), and a theoretical Maximum Yield hybrid pathway.

5.1.1 Overview of Waste Collection and Composition

Surrey residents currently generate over 500,000 tonnes of household waste annually, including black bag waste, recycling, garden waste, food waste, fly tips, bulky waste collections, and batteries. The districts and boroughs are Waste Collection Authorities (WCA), responsible for both kerbside and 'bring site' collection. Surrey County Council (SCC) operates as the Waste Disposal Authority (WDA) and is responsible for arranging the treatment, recovery, or disposal of all collected waste.

Based on the waste hierarchy (see Figure 4-2) the reuse or recycling of materials is prioritised over disposal. Collected dry recyclables are typically sent to Materials Recovery Facilities (MRFs) where they are sorted into individual material streams for onward reprocessing. SCC also supports reuse initiatives including community recycling centres, furniture reuse schemes, and local repair cafes.

SCC is working towards achieving a household waste recycling target of 65% by 2030, with the most recent data showing a 54% recycling rate.

Energy recovery is used only for residual waste which cannot be re-used or recycled, and landfilling is now a last resort. According to Surrey County Council waste officers interviewed as part of this study no organic waste is currently sent to landfill, with most food and garden waste separately collected for composting or anaerobic digestion.

Approximately 200,000 tonnes/year of residual 'black bag' MSW is processed by SUEZ on behalf of SCC. Around 50,000 tonnes is sent to the Charlton Lane Eco Park gasification facility, while the remaining ~150,000 tonnes is exported to SUEZ's Energy from Waste (EfW) plant in Kemsley, Kent for incineration. There is currently no operational EfW incineration facility in Surrey, due in part to community opposition to previous proposals, which has resulted in a reliance on out-of-county treatment capacity.

This waste stream includes both biogenic materials (e.g. paper, wood) and non-biogenic materials (e.g. fossil-based plastics). These fractions are key to SAF production and emissions assessments.

A detailed breakdown of the composition of this residual waste was provided by Surrey County Council waste team based on 2021 sample data weighted averages applied to 2023/24 waste volumes as summarised in Table 5-1 below. Based on discussions with SCC waste officers we understand that there is no significant variation in waste composition or volumes throughout the year, apart from around Christmas when a larger volume of waste is produced.

Material	Tonnes (wet mass)	% of Total	Notes
Food waste	53,195	28.8%	Biogenic
Paper	25,814	14.0%	Biogenic
Wood	2,606	1.4%	Biogenic
Plastics	28,014	15.1%	100% fossil-based
Metals / Glass	15,361	8.3%	Non-combustible
Other	60,010	32.5%	Includes textiles, appliances, clinical waste, soil, ceramics, plasterboard
TOTAL	**185,000**	**100%**	-

Table 5-1 - Composition of Residual Waste in Surrey (2023/24)

This analysis shows that biogenic materials (food waste, paper, wood, and some textiles) make up around 46% of total residual waste by weight. These materials are eligible for generating GHG credits under most SAF lifecycle assessments.

The 'Other' category is the largest single group at 32.5%, comprising various items including textiles (3.7%), nappies (7.9%), and pet bedding and animal waste (6.3%), alongside other low-calorific or non-fuel materials.

Plastics make up 15.1% of the total and represent a key feedstock for thermochemical conversion routes such as Fischer-Tropsch, though their fossil origin can reduce GHG savings.

Non-combustible metals and glass account for a further 8.3% and would be removed as part of pre-processing or Refuse-Derived Fuel (RDF) refinement.

5.1.2 Future Waste Composition

Future waste composition will be shaped by several major UK policy interventions which are set to influence the volume, material mix, and quality of residual MSW. These changes will have a direct impact on the suitability of MSW as a feedstock for SAF production, particularly in relation to fossil-based carbon content (e.g. plastics), biogenic material (e.g. food and paper), moisture levels, and material heterogeneity, as summarised in Table 5-2 below.

Policy	MSW Composition Impact	SAF Feedstock Implications
UK ETS Extension	Less fossil-based waste in MSW	Improves SAF cost competitiveness vs. EfW
EPR	Reduced non-recyclable packaging	May reduce high-carbon feedstock availability
Simpler Recycling	Better separation and cleaner waste streams	Better traceability, potentially lower carbon yield
Landfill Tax	More material diverted to treatment routes	Opportunity for SAF; material heterogeneity may increase

Table 5-2 - Summary of Policy Implications on MSW Composition

Together, these policy shifts are likely to reduce the plastic and biogenic content of black bag waste over time, particularly through greater separation at source. Although this may reduce the average energy content and SAF yield from MSW, the rising costs of EfW and landfill will improve the relative economics of MSW-to-SAF technologies. Additionally, better waste tracking and cleaner waste streams may allow for more consistent and optimised feedstock supply.

5.1.2.1 Future MSW Composition Scenarios (2030)

To explore how these policy interventions might reshape residual waste in Surrey by 2030, we present three composition scenarios reflecting varying levels of implementation and behavioural change:

- **High Impact**: All policies are fully implemented with high public and industry compliance
- **Medium Impact**: Moderate implementation, with mixed uptake across policy areas
- **Low Impact**: Limited impact due to delays or resistance

Estimated annual percentage changes by material type per scenario (2027–2030) were applied to Surrey's 2023/24 baseline. Full results are shown in Appendix A. Highlights include:

- Plastics decline by ~5-20% by 2030 depending on scenario
- Food waste and paper/card also reduce modestly

- The ‘Other’ category remains dominant and relatively unchanged

These changes imply that future SAF feedstock from MSW will likely be somewhat lower in carbon content but cleaner and more consistent. SAF producers will need robust feedstock pre-treatment systems and flexible sourcing strategies to maintain fuel yields and conversion efficiencies over time.

This modelling aligns with international work such as the Port of Seattle study, which explored “Zero Plastics” scenarios and found significant SAF yield reductions (14-24%) when fossil plastic content was removed from MSW streams (EXP, 2023).

5.1.3 SAF Production Potential

This section provides an indicative estimate of the volume of SAF that could be produced annually from residual MSW in Surrey, under baseline and future composition scenarios. It incorporates recent waste composition data (Section 5.1.1), policy-driven composition projections (Section 5.1.2), and evidence-based conversion yields drawn from peer-reviewed and industry-standard sources. Estimates are provided at two levels: a simplified high-level estimate, and a more detailed analysis based on feedstock composition. All estimates are indicative and intended to support strategic assessment rather than detailed engineering design.

5.1.3.1 Simple Yield Estimate

As a first approximation, a generic yield assumption can be applied based on published high-level assumptions. The Royal Society’s *Net zero aviation fuels: resource requirements and environmental impacts* briefing (Royal Society, 2023) and the Port of Seattle *Municipal Solid Waste to Liquid Fuels* study (EXP, 2023) both note that, in the absence of detailed composition analysis, a conversion efficiency of around 10% of residual MSW wet mass to SAF can be used as a starting point. This includes implicit assumptions about sorting, drying, and conversion efficiencies.

Applying this figure to the ~185,000 tonnes of residual waste generated annually in Surrey results in an initial estimated output of ~18,500 tonnes of SAF per year.

This estimate includes all residual waste regardless of composition or moisture content and is therefore highly approximate.

5.1.3.2 Composition-Based Yield Estimates

A more refined estimate excludes unsuitable fractions and applies moisture assumptions to convert relevant materials into RDF-equivalent dry weight. Using values from IEA Bioenergy Task 36: ‘Characterisation of MSW for Combustion Systems’ (SINTEF Energy Research, 2001), total RDF-relevant feedstock is estimated at ~62,000 tonnes RDF per year. This gives an RDF conversion yield of 0.33 tonnes RDF per tonne MSW.

This RDF feedstock was used to calculate SAF production potential under three distinct process configurations:

- Fischer-Tropsch (FT): A mature, gasification-based route converting syngas directly to liquid hydrocarbons.
- Alcohol-to-Jet (ATJ): Also gasification-based, but with syngas fermented to ethanol before catalytic upgrading to jet fuel.

- **Optimised 'Maximum Yield' Hybrid Pathway**: A theoretical maximum SAF yield configuration based on future potential systems.

The maximum yield configuration assumes the integration of multiple process enhancements, including hydrogen addition via electrolysis, oxygen recovery, and catalytic conversion of CO_2 to CO using the reverse water-gas shift reaction. Under this configuration, process modelling (EXP, 2023) indicates a maximum potential yield of 0.34 tonnes SAF per tonne of dry RDF (see Figure 5-1 below), representing a theoretical upper limit assuming all optimisation steps are achieved with access to low-cost renewable energy.

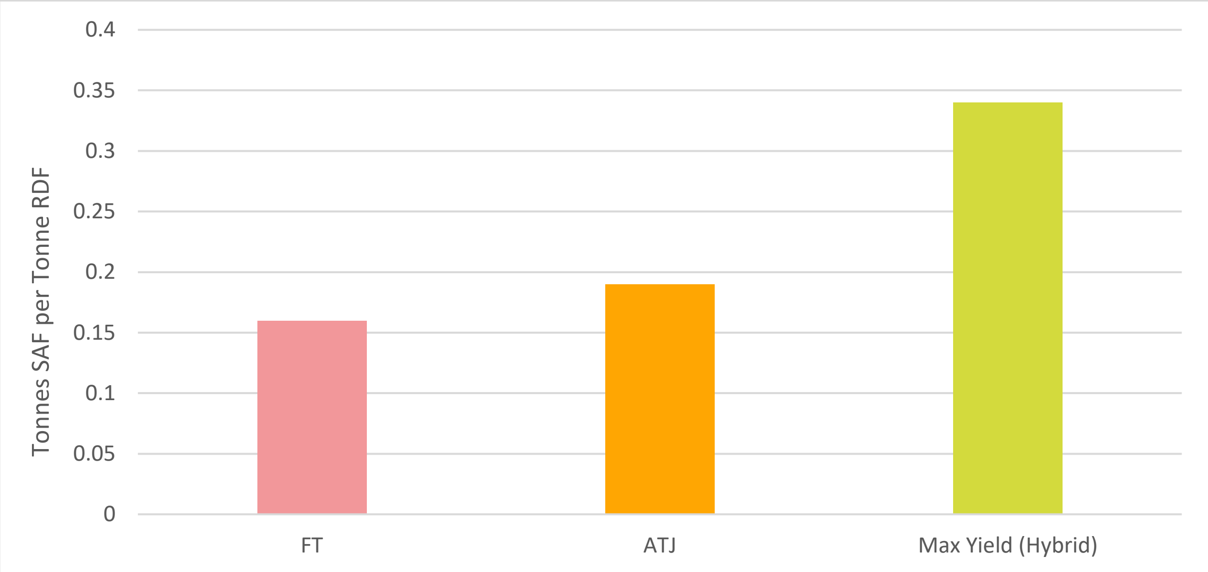


Figure 5-1: SAF Yield by Pathway

Figure 5-1 summarises estimated SAF output from this RDF material under three conversion pathways, based on yield values from the Port of Seattle study (EXP, 2023):

- **FT**: 0.16 tonnes SAF per tonne RDF
- **ATJ**: 0.16 - 0.19 tonnes SAF per tonne RDF (biogenic only)
- **Max Yield (Hybrid)**: 0.34 tonnes SAF per tonne RDF

Using these SAF yield conversion figures we can estimate the potential yield based on the composition of Surrey's MSW for each possible pathway:

- **FT**: ~9,800 tonnes SAF/year
- **ATJ**: ~4,800 -5,700 tonnes SAF/year*
- **Max Yield (Hybrid)**: ~20,800 tonnes SAF/year

**The ATJ pathway is limited to biogenic inputs, meaning fossil-derived plastics are excluded. This estimate applies the ATJ yield to only the biogenic portion of RDF (assumed to be ~50% based on compositional analysis of RDF relevant materials in Surrey's MSW).*

These estimates provide a more realistic assessment of SAF yield from Surrey's residual waste stream, accounting for moisture, conversion process losses, and compositional suitability.

While similar yields may be technically achievable, ATJ-SPK remains restricted to biogenic feedstocks, whereas FT-SPK can accept a broader range including non-recyclable plastics. This difference has implications for both feedstock flexibility and compliance with current SAF policy definitions.

Detailed calculations and assumptions including moisture content values and RDF-relevant materials breakdown are included in Appendix B.

5.1.3.3 Scenario-Based Forecasts to 2030

As outlined in Section 4.1.2, residual waste composition in Surrey is expected to change by 2030 due to policy reforms such as Simpler Recycling, EPR, and the inclusion of waste incineration in the UK ETS.

To assess future SAF potential, we applied the same moisture assumptions and yield factors to the updated waste composition projections for Low, Medium and High Impact scenarios, shown below in Table 5-3Table 5-3: Projected SAF Yield per Scenario (2030).

2030 Scenario	Total Dry Feedstock (Tonnes RDF)	FT (Tonnes SAF)	ATJ (Tonnes SAF)	Max Yield (Tonnes SAF)
Low Impact	59,525	9,524	4,659 - 5,532	20,238
Medium Impact	56,444	9,031	4,418 - 5,246	19,191
High Impact	53,487	8,558	4,186 - 4,971	18,186

Table 5-3: Projected SAF Yield per Scenario (2030)

In all cases, a reduction in fossil-based plastics results in a modest decline in total SAF yield potential. This reflects the high energy density and thermal conversion efficiency of plastics under gasification processes, even though their sustainability and eligibility under current SAF policy frameworks may be contested.

Under the High Impact scenario, improved recycling and waste separation significantly reduce the SAF-relevant content of residual waste, lowering the estimated SAF output by ~13% compared to the baseline. SAF output is reduced by ~3% and ~8% in the Low Impact and Medium Impact scenarios respectively.

The figures for FT and Max Yield pathways assume the use of both biogenic and fossil-derived materials. If SAF production were restricted to biogenic-only inputs (e.g. under more stringent sustainability criteria or using current ATJ technologies), total yields would be significantly lower, as fossil-derived plastics would be excluded and only a portion of the remaining feedstock of ~50% would be suitable for conversion.

5.1.3.4 Regional and National Context

Heathrow Airport is reported to uplift around 22 million litres of jet fuel per day (GeoDrilling International, 2024), equivalent to roughly 6.4 million tonnes per year based on standard jet fuel density. This makes Heathrow the UK's largest single point of aviation fuel demand, accounting for more than half of national consumption.

Heathrow has set a target of using 3% SAF by 2025 and 11% by 2030, with the airport providing £86 million in incentives to help airlines meet the 2025 target (Heathrow Media Centre, 2025). These percentages translate to approximately 190,000 tonnes of SAF in 2025 and over 700,000 tonnes by 2030, based on the 6.4 million tonnes/year jet fuel baseline.

Our analysis indicated that Surrey's residual waste stream could support the production of approximately 4,200 to 20,800 tonnes of SAF per year, depending on technology pathway and waste composition. While significant, this would offset only 0.07% to 0.32% of Heathrow's total annual jet fuel use, or around 0.6% to 2.9% of its projected 2030 SAF demand.

To place this in a wider regional context, local authority collected waste data for 2023/24 (Defra, 2025) indicates that the full HSPG member authorities collectively generated around 330,000 tonnes of residual household waste. This equates to an estimated 110,000 tonnes of RDF, and could support the production of approximately 33,000 tonnes of SAF per year. This is equivalent to around 17% of Heathrow's projected 2030 SAF requirement. Across Greater London as a whole, residual MSW totals approximately 2.5 million tonnes per year, which could yield up to 250,000 tonnes of SAF. This is equivalent to over a third of the 700,000 tonnes of SAF that Heathrow alone will require to meet its 11% SAF target by 2030, highlighting the strategic importance of London's residual waste stream as a potential contributor to decarbonising aviation fuel supply in the UK.

At the national level, England generated around 26.1 million tonnes of residual municipal waste in 2023 (DEFRA, 2025). Applying similar yield assumptions suggests a theoretical SAF potential of up to 2.6 million tonnes per year, well above the UK's 2030 SAF mandate of 1.5 million tonnes (as 10% of projected aviation fuel demand). In practice, however, only a portion of this would be realisable due to constraints such as feedstock availability, sorting requirements, technology deployment, and sustainability rules around non-biogenic materials. The biogenic content of residual waste, which influences both SAF sustainability and emissions calculations, is an important consideration and is addressed in Section 6.

Gasification-based SAF plants typically require a minimum of 100,000 tonnes of dry RDF feedstock (equivalent to around 300,000 tonnes of MSW) per year to be commercially viable, based on operational examples such as Enerkem's Edmonton Waste-to-Biofuels gasification facility (Enerkem, 2011). Most recent commercial-scale proposals are designed to process larger volumes, with Velocys' Altato facility designed for 200,000 tonnes of RDF feedstock per year, producing 50,000 tonnes of SAF. The Port of Seattle study supports this commercial scale, identifying 180,000-260,000 tonnes/year of RDF as the minimum feasible design threshold for both FT and ATJ pathways (EXP, 2023). Expert consultation for this study confirmed that smaller-scale plants are technically possible, but that 100,000 tonnes/year of RDF represents a reasonable lower limit, with 200,000 tonnes or more preferred to support cost-effective delivery via economies of scale and attract investment.

Surrey's projected SAF-relevant RDF yield (up to 60,000 tonnes per year by 2030) falls below this threshold. While technically feasible, a standalone facility is unlikely to be commercially attractive without wider regional cooperation, co-located infrastructure, or targeted financial support. However, the combined RDF potential across HSPG member authorities of around 110,000 tonnes per year exceeds the lower limit for viable commercial plant scale and could support delivery of a SAF facility if backed by strong regional coordination and investment. This reinforces the case for collaboration across the HSPG area and beyond. Pooling residual waste from neighbouring authorities could enable economies of scale, justify investment in advanced sorting and pre-treatment facilities, and strengthen the business case for SAF production serving Heathrow and the wider region.

5.2 Waste Transport Considerations

5.2.1 Existing Waste Infrastructure and Flows

SCC's existing residual waste infrastructure provides a well-established logistical base for consolidating and transporting waste suitable for SAF production. Key assets include:

- Five Waste Transfer Stations (WTS), where collected waste is bulked prior to onward transport;
- Fifteen Community Recycling Centres (CRCs) for non-kerbside household waste, three of which are co-located with WTSs;
- A gasification facility designed to treat up to 50,000 tonnes of residual waste per year;
- An anaerobic digestion (AD) plant processing approximately 40,000 tonnes per year of food waste.

The gasifier and AD facility are both located at the Charlton Lane Eco Park in Spelthorne, which also includes a CRC and bulking facility for recyclables. The AD plant is fully operational and currently treats all of Surrey's food waste. The gasifier has been fully operational since 2022.

In addition to council-owned assets, SCC relies on a network of third-party WTS and treatment facilities, primarily delivered through its long-term waste contract with SUEZ Recycling and Recovery Ltd. This includes three facilities operated by SUEZ Surrey, plus a fourth site at Doman Road (owned by Surrey Heath Borough Council and operated by Amey) which bulks Surrey Heath's food waste and dry recycling.

Approximately 10,000 tonnes of bulky waste is also generated annually in Surrey. Reusable items are diverted through the county's five CRC reuse shops. Non-reusable bulky waste is either shredded and sent to the Kemsley Energy-from-Waste (EfW) plant in Kent, or sent directly to landfill.

A summary map of key sites and inter-site flows is presented in Figure 5-2 below, including WTSs, CRCs, and principal treatment or disposal points such as Charlton Lane Eco Park and key landfill sites. The top ten largest waste flows by weight are shown in the map as red arrows. The key areas of interest for this study are shown in a lavender colour for HSPG member councils and light blue for Surrey Country Council (SCC), which is also a member of HSPG. Local authorities which are within SCC and also members of HSPG in their own right are shown in darker blue.

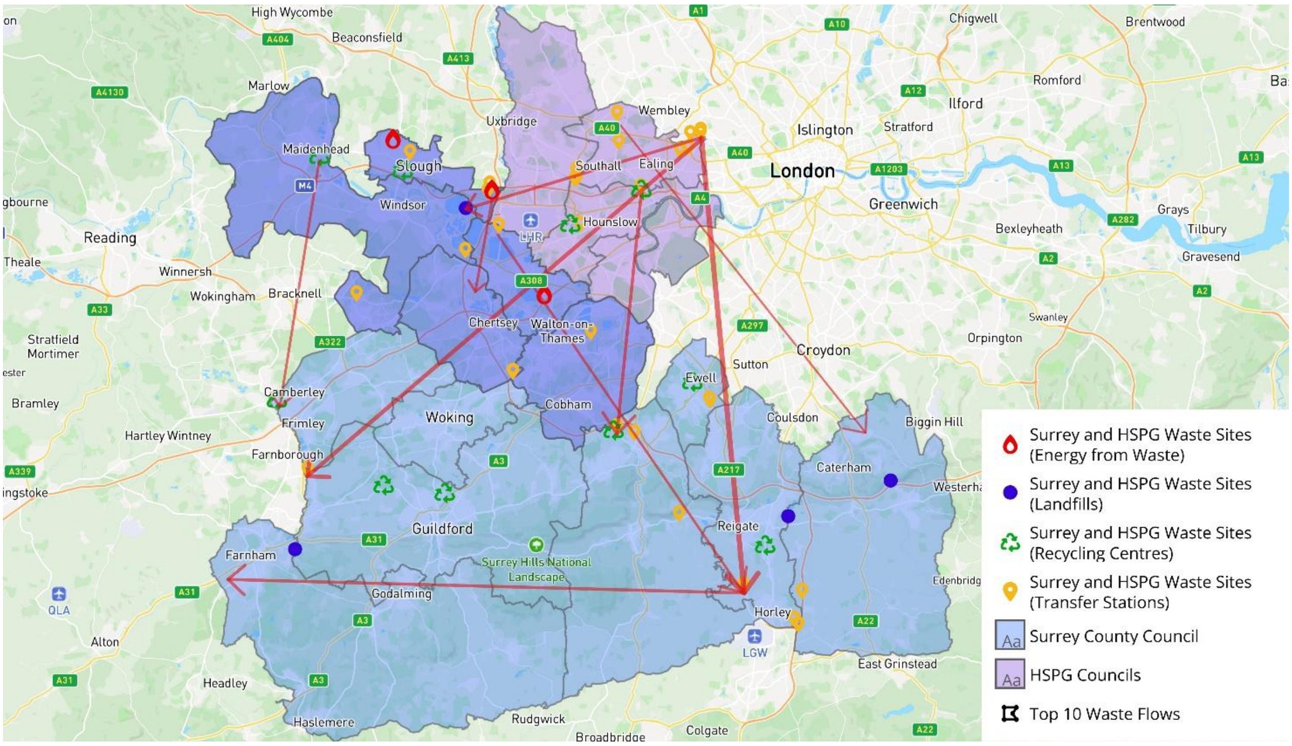


Figure 5-2: Key Waste Locations and Flows in Surrey and HSPG Councils

The map shows that cross-regional waste flows are common, with typical waste transport distances of 40-50 km. This highlights the existing logistical framework that could support the consolidation of residual waste from across the HSPG area. The pattern of inter-council flows suggests that gathering feedstock for a regional SAF facility, particularly one located near major road infrastructure or existing waste sites, is both geographically and operationally feasible within current waste management practices.

5.2.2 Estimated Transport Requirements for SAF Production

The potential development of a SAF production facility in Surrey would require the consolidation and transport of SAF-relevant residual waste (estimated at up to 58,000-64,000 tonnes of dry feedstock per year available) from across the county. For this study, Charlton Lane Eco Park is used as a proxy SAF facility location due to its proximity to Heathrow, co-located infrastructure, and existing waste processing functions.

This feedstock could be drawn from:

- Local WTS sites, including those in Waverley, Guildford, and Elmbridge;
- Existing residual waste streams currently sent to EfW, landfill, or long-haul transfer;
- Third-party sites managed through the SCC waste contract.

Transport distances between WTS sites and Charlton Lane vary, but most are within a 15-30 mile radius. This is broadly comparable to current waste transport distances across Surrey, although most residual waste currently sent to Kemsley EfW travels up to 50 miles, and bulky waste sent to landfill may travel even further. Redirecting SAF-relevant waste to a facility within Surrey would therefore not introduce unusual transport demands, and could in some cases reduce reliance on longer-haul routes.

For comparison, Charlton Lane to Heathrow Airport is approximately 8 miles by road, meaning final SAF product delivery to the airport would require only minimal transport, supporting local-to-local supply chain ambitions.

5.2.3 Feasibility and Regional Considerations

From a transport feasibility perspective, Surrey's existing infrastructure is well-placed to support a SAF production facility. Waste is already consolidated at multiple transfer stations, and the volume of SAF-relevant feedstock required is within the scale typically managed by the current network.

Some adjustments may be required, such as:

- Introducing pre-treatment or sorting at transfer stations to isolate eligible feedstock
- Adjusting collection routes or contracts to ensure consistent supply
- Formal agreements with contracted providers to divert qualifying waste streams.

While this analysis assumes a single facility within Surrey, there remains the option of exporting SAF-relevant waste to a regional hub outside the county. This could be particularly relevant if multiple authorities within the HSPG or from further afield seek to aggregate feedstocks for a larger-scale facility. Such collaboration could improve economies of scale, reduce unit costs, and support shared infrastructure investment.

5.3 Waste Contract Considerations

This section summarises SCC's current waste management contracts and assesses their implications for redirecting residual waste to SAF production. The analysis is based on public documentation and interviews with council officers.

5.3.1 Current Contractual Arrangements and Governance

Surrey's municipal waste services are governed by a long-standing Integrated Waste Private Finance Initiative (PFI) contract with SUEZ Recycling and Recovery Surrey Ltd. Originally signed in 1999, the agreement was extended in early 2024 and now runs until October 2029. A break clause in 2027 allows SCC to disaggregate and re-procure individual services ahead of full contract expiry.

Under the PFI contract, SUEZ is responsible for:

- Collection and treatment of residual waste from all 11 Waste Collection Authorities (WCAs)
- Bulking and haulage from the five Waste Transfer Stations (WTSs) and fifteen Community Recycling Centres (CRCs)
- Management of dry recycling services for nine WCAs
- Operation of reuse shops and the Charlton Lane Eco Park facilities, including the Anaerobic Digestion (AD) plant and gasification facility

The contract is valued at approximately £62 million per year. The average gate fee for residual waste is around £127 per tonne (including haulage), with food and garden waste treatment costs ranging from £34 to £36 per tonne. Ownership of key infrastructure (e.g. Eco Park, WTSs, CRCs) will revert to SCC in 2029. However, some third-party commercial sites used under the contract may not remain available beyond this date.

5.3.2 Future Procurement and Implications for SAF

In parallel with the PFI extension, SCC awarded a separate 10-year contract to SUEZ in 2024 for the disposal of approximately 150,000 tonnes per year of residual waste. This replaces previous export arrangements to the Kemsley Energy-from-Waste (EfW) facility in Kent. The new four-lot contract runs until 2034, with an option to extend by a further 5 years to 2039, and is valued at £260 million if delivered for the full 15 years.

Unlike the PFI, this contract does not appear to include a break clause or variation mechanism before the initial 10-year term is complete in 2034. As such, SCC's ability to divert this waste to SAF production is constrained unless renegotiation is undertaken. However, the 2027 break clause in the PFI still offers a strategic opportunity. While it does not directly govern disposal, it enables SCC to begin reshaping operational control and preparing for the integration of alternative treatment routes such as SAF.

If a SAF facility is developed in Surrey during the 2030s, SCC may be able to negotiate a phased diversion of waste in the mid-2030s, subject to legal and commercial feasibility. Planning for this should begin well ahead of the 2027 break point to enable early alignment and flexibility.

Element	Provider	Contract Term	Notes
Integrated waste PFI	SUEZ	1999–2029 (5-yr extension)	Early termination option in 2027
Residual Waste Disposal (approx. 150 kt/year)	SUEZ	2024 to 2034 (with option to extend to 2039)	Four-lot contract; 10 year contract to 2034 with option to extend to 2039
Eco Park	SUEZ	Included in PFI	Includes AD plant for food waste and gasifier
CRCs, WTSs, bulking sites	SUEZ	Included in PFI	SCC regains asset ownership in 2029

Table 5-4: Summary of Key Waste Contractual Arrangements (SCC & SUEZ)

Although most of Surrey's residual waste is contractually committed until 2034, the 2027 PFI break clause provides a key opportunity to initiate strategic changes. Early engagement and coordination across both contracts will be essential to enable waste diversion toward SAF production during the 2030s.

5.4 SAF Production Requirements

This section provides a high-level overview of the technical requirements for MSW-to-SAF production, focusing on two ASTM-approved thermochemical pathways: Fischer-Tropsch (FT-SPK/A1-A2) and Alcohol-to-Jet (ATJ-SPK/A5). Both are considered compatible with processed MSW as feedstock (i.e. RDF) and involve a gasification step to produce syngas. Key aspects are reviewed below, including site footprint, energy and hydrogen requirements, infrastructure needs, and feedstock compatibility.

While the Fischer-Tropsch process itself is fully commercial, the preceding waste gasification and syngas conditioning steps, as well as overall plant integration, are less established in a SAF context. As noted by IEA Bioenergy Task 39 (IEA Bioenergy, 2024), several gasification-based SAF projects are under development globally, including by Velocys, Enerkem, and Fulcrum Bioenergy, but high investment costs and long construction times mean commercial scale-up via this route is likely to be gradual. These constraints are important to consider when evaluating near- and medium-term deployment in the UK.

5.4.1 Land Requirements

The land required for a SAF production facility depends on the chosen conversion pathway. FT plants typically require a larger footprint due to the complexity of gasification, syngas cleaning, and high-pressure catalytic synthesis. ATJ facilities, while still capital-intensive, generally offer greater modularity and can be deployed at smaller scale with a more compact site layout.

Both pathways require an initial gasification step to convert RDF into syngas. FT then converts this syngas directly into liquid hydrocarbons, whereas ATJ uses the syngas to produce alcohols (e.g. ethanol or isobutanol), which are then upgraded to jet fuel. The lower-pressure, more flexible upgrading process used in ATJ systems supports a smaller site layout.

The Port of Seattle study (EXP, 2023) estimated total site requirements of 40 to 100 acres for plants processing between 180,000 and 480,000 tonnes/year of RDF. For a smaller facility handling ~100,000 tonnes/year, typical requirements are summarised in Table 5-5 below.

Pathway	Estimated Land Requirement
FT-SPK	20 - 25 acres
ATJ-SPK	15 - 20 acres

Table 5-5: Land Requirements for MSW-to-SAF Pathways

These figures include both core plant area and necessary off-site infrastructure (utilities, storage, roads, buffer zones). For context, 20 acres is equivalent to roughly 11 football pitches. A site of this size would need to be appropriately zoned, with suitable access to road and utility infrastructure, and adequate buffer zones to manage potential noise, emissions, and traffic impacts.

Charlton Lane Eco Park in Surrey occupies ~12 acres and accommodates an AD plant, gasifier and CRC, as well as site access and landscaping. This suggests a SAF facility of similar scale should be physically feasible in the area. Furthermore, approximately 30 acres of undeveloped land adjacent to the Eco Park may offer a valuable opportunity for co-location and integration.

5.4.2 Energy Requirements

5.4.2.1 Energy Demand

Both FT and ATJ pathways are energy-intensive, with different profiles. FT requires significant thermal energy for gasification, syngas conditioning, and high-pressure synthesis. ATJ also begins with gasification but relies more heavily on electrical and chemical processing for alcohol synthesis and upgrading. Estimated energy use ranges from 2 to 5 MWh per tonne of SAF for FT, and 3 to 4 MWh per tonne for ATJ (EXP, 2023).

Table 5-6 below shows the estimated annual energy requirement per pathway, assuming a facility processes 100,000 tonnes of RDF per year, and yields around 20,000 tonnes of SAF.

Pathway	Estimated Energy Use (MWh/tonne SAF)	Energy Demand (MWh/year)	Notes
FT-SPK (A1/A2)	2-5	40,000-100,000	High-temperature gasification, syngas compression, FT synthesis, hydrocracking
ATJ-SPK (A5)	3-4	60,000-80,000	Gasification, ethanol synthesis, distillation, upgrading

Table 5-6: Energy Requirements for MSW-to-SAF Pathways

These values are indicative and can vary based on plant configuration, pre-treatment efficiency, waste composition, and heat recovery integration.

5.4.2.2 Hydrogen Requirements

Hydrogen is an essential input in most thermochemical and catalytic upgrading processes used to produce SAF from residual waste. In both the FT-SPK and ATJ-SPK pathways, hydrogen is used to refine syngas-derived intermediates into liquid hydrocarbons with the appropriate characteristics for jet fuel.

Based on the Port of Seattle MSW-to-Liquid Fuels Study (EXP, 2023), Fischer-Tropsch production from RDF-based syngas requires approximately 18-19 Nm^3 of hydrogen per barrel of jet fuel. Assuming a conversion of six barrels per tonne of SAF and 11 Nm^3 per kilogram of hydrogen, this equates to around 9-10 kilograms of hydrogen per tonne of SAF produced.

ATJ-SPK, while less documented for MSW, is assumed to require a similar quantity due to comparable syngas upgrading needs.

Table 5-7 summarises the indicative hydrogen requirements for a facility producing 20,000 tonnes of SAF per year from approximately 100,000 tonnes of RDF input.

Pathway	Hydrogen Requirement (kg / tonne SAF)	Annual Hydrogen Demand	Source
FT-SPK (A1/A2)	9-10 kg	180-200 tonnes/year	Port of Seattle study (2023)
ATJ-SPK (A5)	~10 kg	~200 tonnes/year	Assumed based on Port of Seattle process

Table 5-7: Hydrogen Requirements for MSW-to-SAF Pathways

These hydrogen requirements are modest compared to power-to-liquid (PtL) routes, which rely on green hydrogen and CO_2 as primary inputs. In both FT and ATJ pathways using MSW feedstock, syngas derived from gasification serves as a key intermediate, either converted directly to hydrocarbons via FT, or first upgraded to alcohols in the ATJ route. This approach enables efficient use of the carbon content in residual waste while limiting external hydrogen demand. It also supports the feasibility of integrating SAF and hydrogen production within a single waste processing site, provided that hydrogen supply is matched to process needs.

5.4.3 Infrastructure Requirements

The infrastructure required to convert residual MSW into SAF differs between the FT-SPK and ATJ-SPK pathways. While both begin with gasification of waste into syngas, the scale, process demands, and supporting infrastructure vary.

FT-SPK is generally suited to large-scale centralised facilities due to the complexity and capital intensity of high-pressure catalytic systems. It also requires pre-treatment of the waste into a dry, uniform RDF, and relies on a co-located hydrogen supply to balance syngas composition. Water is needed for steam reforming and cooling processes, contributing to the overall utility demand.

ATJ-SPK, while still under development for MSW feedstocks, is considered more modular and potentially deployable at smaller scale. Although it also uses hydrogen for upgrading, the volumes may be lower, and the modularity of the ATJ process may reduce infrastructure barriers. Water requirements are typically lower but still present, especially in biological routes.

These infrastructure factors are summarised below in Table 5-8.

Factor	FT-SPK (A1/A2)	ATJ-SPK (A5)
Scale & Modularity	Large-scale, centralised	Smaller-scale, modular potential
Hydrogen Requirement	Moderate - required to balance syngas ratio	Required during upgrading, likely similar volume
Feedstock Handling	High - drying, sorting, grinding to produce RDF	Moderate - biogenic RDF only (current pathways not proven for plastics)
Water Requirement	High - for steam reforming and cooling	Moderate
Technology Maturity	Near commercial (e.g. Fulcrum, Velocys)	Emerging (e.g. LanzaJet, Gevo) - less proven for MSW

Table 5-8: Key Infrastructure Considerations for MSW-to-SAF Pathways

Overall, FT-SPK is a better proven technology but requires centralised infrastructure, robust feedstock processing, and significant water and hydrogen inputs. ATJ-SPK may offer greater deployment flexibility and lower infrastructure thresholds, though it is less established for MSW feedstocks.

Additionally, there may be clear advantages in co-locating SAF production facilities with existing waste processing infrastructure, particularly at waste transfer stations, energy-from-waste plants, or sites already licensed for handling RDF. This can reduce feedstock transport distances, make use of existing utility connections, and simplify planning. Co-location with renewable energy or future electrolyser projects may also support hydrogen integration, while shared access to water, steam, or cooling systems can reduce costs and environmental impacts. These opportunities should be considered when identifying potential SAF facility locations within Surrey or the wider region.

5.4.4 Feedstock Flexibility and SAF Yield

The feasibility of SAF production from MSW depends not only on feedstock availability, but also on the flexibility of the chosen process in handling varying waste compositions, and on how different material inputs are treated under SAF sustainability rules. Residual MSW contains a mix of biogenic materials (e.g. food waste, paper, card, and wood) and fossil-derived components (e.g. plastics). The UK SAF Mandate permits non-recyclable fossil-derived plastics as eligible feedstock, provided they would otherwise be incinerated or landfilled (DfT, 2025). This allows plastic-rich RDF to be used as feedstock without undermining sustainability compliance, and enhances overall SAF yield due to plastics' high carbon content.

The FT-SPK pathway is widely regarded as more tolerant of feedstock variability. Provided the waste is pre-treated into a dry, homogeneous RDF, FT systems can process a broad spectrum of carbonaceous materials. Recent engagement with experts on the Velocys Altalto project confirms that modern FT-based systems are being designed to accept mixed RDF with minimal sorting. Once converted to syngas, the feedstock's origin (biogenic or fossil) is less relevant, so long as the syngas has suitable H_2:CO ratios. This allows both plastics and biogenic material to contribute to SAF yield.

By contrast, the ATJ-SPK pathway is more constrained. While it also begins with gasification of MSW, ATJ technologies rely on the production of alcohol intermediates (e.g. ethanol) from syngas, usually via fermentation or catalytic synthesis. Current ATJ systems have only been demonstrated using biogenic feedstocks such as paper, food waste, or cellulosic residues. Fossil-derived syngas (e.g. made from RDF containing plastics) cannot currently be converted into SAF via the ATJ route, despite being theoretically permitted under the SAF mandate. This significantly reduces feedstock flexibility and yield.

Table 5-9 below summarises the relative suitability of typical MSW fractions for FT and ATJ pathways, with only paper/cardboard and wood (if pre-treated) suitable for both pathways.

Material Component	Typical Share of Residual MSW	FT-SPK Suitability	ATJ-SPK Suitability
Food waste	25-35%	**No** - high moisture, low energy value	**Yes** - fermentable sugars with treatment
Wood	1-3%	**Yes** - low moisture, good energy	**Limited** - needs pre-treatment
Paper / cardboard	10-15%	**Yes** - dry and carbon-rich	**Yes** - suitable for cellulosic ethanol
Non-recyclable plastics	20-30%	**Yes** - high carbon	**No** - not currently fermentable
Garden waste	5-10%	**Limited** - needs drying and blending	**Limited** - lignocellulosic, needs pre-treatment
Textiles	4-6%	**Yes** - some carbon content	**No** - not fermentable
Glass / metals / inerts	5-10%	**No** - must be removed	**No** - must be removed

Table 5-9: Feedstock Suitability by Material Type and SAF Pathway

Overall SAF yield depends on the carbon and hydrogen content of the feedstock, as well as the efficiency of the gasification and upgrading process. Plastics, paper, card, and wood represent the most productive fractions for FT-SPK due to their high carbon content and relatively low moisture.

Under favourable assumptions, SAF yields of around 20% by mass of input RDF are achievable using FT-SPK. With a well-processed RDF stream, typical SAF yields of 16-20% by mass of dry input are achievable for FT. This equates to around 10-12% by wet MSW mass, depending on composition.

While both FT and ATJ begin with gasification, FT-SPK systems offer significantly greater feedstock flexibility, processing both biogenic and fossil-derived inputs under the current SAF mandate. In contrast, ATJ-SPK is effectively limited to biogenic components in practice, with plastics excluded unless major technology advances are made. This difference affects both SAF output and eligibility under evolving policy frameworks.

5.4.5 Summary of SAF Pathway Comparisons

This section has assessed the practical feasibility of producing SAF from residual MSW using two established thermochemical pathways: Fischer–Tropsch (FT-SPK) and Alcohol-to-Jet (ATJ-SPK). While both begin with the gasification of RDF to produce syngas, their downstream processes, feedstock compatibility, infrastructure requirements, and regulatory constraints differ in several important respects.

FT-SPK is the more technologically advanced and widely demonstrated pathway for processing mixed residual waste. It is compatible with a broad range of carbon-rich materials, including non-recyclable plastics and textiles, which are eligible under the UK SAF mandate when sourced from MSW. This feedstock flexibility, combined with a relatively high yield (~16% of dry RDF mass), makes FT-SPK well suited to large-scale, centralised production from mixed RDF streams. However, it requires extensive pre-treatment, a consistent hydrogen supply, and significant land and utility infrastructure.

ATJ-SPK, in contrast, offers potential benefits in terms of modularity and deployment at smaller scale, particularly where a clean biogenic waste stream can be secured. However, it is currently more limited in practice. Existing technologies rely on the fermentation or catalytic conversion of syngas to alcohols, processes not yet demonstrated at commercial scale for fossil-derived carbon sources such as plastics. As a result, ATJ systems are effectively restricted to biogenic RDF components, limiting their SAF output unless additional pre-processing and sorting is introduced.

A comparative summary is provided in Table 5-10 below.

Factor	FT-SPK	ATJ-SPK
Technology Maturity	Commercial-scale UK projects underway	Demonstration stage - not proven at scale for MSW
Feedstock Flexibility	High - accepts plastics, textiles, paper, etc	Limited - biogenic inputs only
SAF Mandate Eligibility	Includes biogenics + non-recyclable plastics	Biogenic only (in practice)
Yield from RDF	~16% of dry RDF	~16-19% (biogenic RDF only)
Hydrogen Requirement	Moderate	Moderate

Water Use	High	Lower
Scale & Modularity	Large-scale, centralised	Smaller-scale, potentially modular
Pre-treatment Needs	High - RDF drying, sorting, grinding	Moderate - biogenic RDF only
Contaminant Tolerance	High - robust to mixed waste	Low - sensitive to impurities in syngas

Table 5-10: Comparison of FT-SPK and ATJ-SPK Pathways for MSW-to-SAF

In summary, FT-SPK currently offers greater feedstock flexibility, higher yields from mixed MSW, and better alignment with current SAF policy, particularly where non-recyclable plastics are present. While ATJ-SPK has future potential for decentralised, biogenic waste-to-fuel systems, it remains constrained by its narrower feedstock compatibility and earlier stage of technological development. These pathway differences also have important implications for emissions calculations and sustainability performance, which are explored further in Section 6.

5.5 Summary of Technical Viability

This section has assessed the technical feasibility of producing SAF from residual MSW generated in the Surrey area, considering feedstock availability, transport logistics, contractual access, and production process requirements.

Surrey generates a substantial volume of SAF-relevant waste materials, including over 63,000 tonnes per year of paper, card, plastics, wood, and textiles. After processing, this is equivalent to approximately 61,000 tonnes of RDF feedstock. Depending on the chosen production pathway, this could yield between 5,000 and 21,000 tonnes of SAF per year. While technically feasible, this falls below the typical feedstock requirement for a standalone commercial-scale facility. Most MSW-to-SAF projects internationally are designed to process 100,000-200,000 tonnes of RDF per year, reinforcing the need for regional feedstock pooling across the wider HSPG area to achieve viable scale. With an estimated 110,000 tonnes of RDF generated annually across HSPG member authorities, this regional catchment could support a facility at the lower end of the commercial scale range.

From a logistical perspective, Surrey's existing waste transfer and transport infrastructure is well-established. Transport distances between key sites are typically 15-30 miles and comparable to current flows for landfill or EfW disposal. A centralised SAF facility located near Charlton Lane would be consistent with these patterns and could minimise additional transport impacts.

Contractual arrangements will play a key role. Much of Surrey's residual waste is committed under long-term treatment contracts, with a new 10-year agreement running to 2034 (with option to extend to 2039). While this may limit flexibility in the near term, a contractual break point in 2027 provides a strategic opportunity to initiate future planning. Engagement with neighbouring authorities and contractors will also be essential to secure sufficient feedstock volumes.

Both FT-SPK and ATJ-SPK pathways are technically viable for SAF production from MSW. FT is currently more mature, better suited to mixed waste streams, and compatible with non-recyclable plastics under the UK SAF Mandate. ATJ may offer higher yield from biogenic fractions and greater modularity, but is less established for RDF-based feedstocks and currently constrained to biogenic carbon inputs only.

A summary is provided in Table 5-11 below.

Technical Area	Summary Assessment
Feedstock Quantity	~61,000 t/year RDF available in Surrey - below the ~100,000 t/year scale threshold for commercial-scale facilities. ~110,000 t/year available across all HSPG member authorities.
Feedstock Quality	High proportion of plastics, paper/card, wood - all suitable for thermochemical conversion via FT
Transport Feasibility	Existing waste flows show acceptable transport distances - no major logistical barriers
Contractual Access	Long-term contracts in place, 2027 offers a key milestone for future planning
Process Viability	Both FT and ATJ pathways feasible - FT more mature, ATJ potentially higher-yield
Scale Requirement	100,000-200,000 t/year RDF preferred for commercial viability

Table 5-11: Summary of Technical Assessment for MSW to SAF in Surrey

6 Environmental Considerations

This section presents a high-level comparison of the greenhouse gas (GHG) emissions associated with residual municipal solid waste (MSW) treatment via energy-from-waste (EfW) incineration versus conversion into Sustainable Aviation Fuel (SAF). The aim is to assess whether SAF production from residual waste can offer climate benefits relative to current disposal practices.

To keep the analysis accessible, a simplified approach is taken:

- The Fischer-Tropsch (FT-SPK) pathway is selected due to its higher technical maturity and feedstock flexibility
- A simple 'rule of thumb' SAF yield of 10% by mass of MSW input is used (Royal Society, 2023)
- A constant biogenic content of 49% is used for simplicity, based on Surrey's MSW composition
- All emissions are presented per tonne of MSW to allow direct comparison between treatment routes

The boundary of the emissions accounting and allocation of avoided emissions can be approached in many different ways. Here, we present a single, simplified view for the purposes of clarity. The analysis includes SAF production and combustion emissions, as well as avoided fossil jet fuel combustion emissions. It excludes upstream emissions from waste collection or fossil fuel extraction, and downstream impacts such as SAF distribution or non-CO_2 climate effects. This reflects a partial lifecycle assessment focused on the main GHG components associated with the disposal of MSW.

6.1 Introduction

Residual MSW typically contains both biogenic and fossil-derived materials. In the Heathrow Strategic Planning Group (HSPG) area, most residual waste is currently treated via EfW incineration. The emissions associated with EfW are increasingly relevant in the context of the UK Emissions Trading Scheme (ETS), which is expected to be extended to cover waste incineration from 2028 onwards.

This section compares the estimated GHG emissions of two MSW treatment pathways:

1) Disposal through EfW with energy recovery
2) Conversion into SAF using the FT-SPK pathway

The analysis focuses on GHG emissions associated with processing and combustion of MSW, avoided emissions resulting from electricity generated from EfW, and the displacement of conventional fossil jet fuel.

The emissions from SAF combustion are adjusted to reflect the ~50% biogenic content of the Surrey MSW feedstock. This results in lower effective emissions for SAF compared to fossil jet fuel, as the avoided emissions on this pathway assumes full combustion emissions for conventional fossil-based jet fuel.

6.2 Counterfactual Disposal Emissions: EfW

In the baseline counterfactual case, residual MSW is sent to EfW incineration, which remains the dominant treatment method for MSW in the Surrey area. EfW incineration produces significant CO_2 emissions from the combustion of fossil-derived materials, particularly plastics, while combustion of biogenic materials is considered to produce zero CO_2 emissions (as an equivalent amount of CO_2 was absorbed during the biomass growth).

Emissions from EfW are broken down into two components: direct emissions from EfW incineration, and the avoided emissions from the electricity which is generated by the EfW displacing grid-average electricity.

Total direct incineration emissions are estimated at 950 kgCO_2e per tonne of MSW, based on IPCC guidance on Emissions from Waste Incineration (IPCC, 2003). Applying a 49% biogenic adjustment yields **485 kgCO_2e/t MSW** of climate-relevant emissions.

EfW facilities also generate electricity, offsetting emissions that would have otherwise arisen from use of grid electricity. UK national statistics indicate an average energy output of 600 kWh per tonne of MSW incinerated (Tolvik Consulting, 2025). Using a carbon intensity of 0.177 kgCO_2e/kWh (DESNZ, 2025), this results in **106 kgCO_2e/t MSW** of avoided emissions. As the UK electricity grid continues to decarbonise over time, the emissions offset from EfW power generation will decline, reducing the relative benefit of this pathway.

The net emissions calculation for the EfW counterfactual is shown in Table 6-1 below.

Emissions Component	GHG Emissions (kgCO_2e/t MSW)
EfW Incineration	+950
Adjustment for ~50% biogenic content	-465
Gross EfW emissions	**+485**
Avoided grid-electricity emissions	-106
Net emissions	**+379**

Table 6-1: MSW to EfW Emissions

After taking into account the biogenic proportion of MSW sent to incineration, as well as the avoided grid-electricity emission the net carbon impact for EfW is **379 kgCO_2e per tonne of MSW**, as shown in Figure 6-1 below.

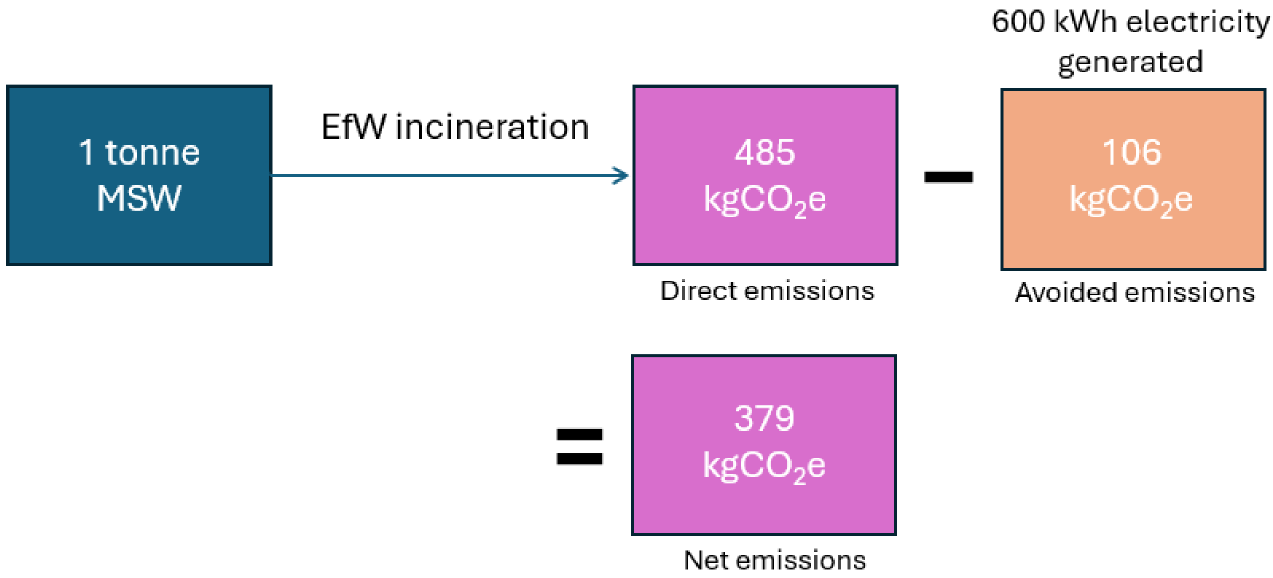


Figure 6-1: Energy from Waste Incineration Emissions

6.3 MSW to SAF Emissions

This section estimates emissions associated with converting MSW to SAF using the FT-SPK pathway. Emissions are broken down into three components: SAF production, SAF combustion, and the avoided emissions from displacing fossil jet fuel combustion.

6.3.1 SAF Production Emissions

SAF production involves multiple emissions-generating processes, including RDF preparation, gasification, Fischer-Tropsch synthesis, hydrogen input, and fuel upgrading. The analysis uses a simplified, conservative approach assuming a fixed SAF production emissions of 1,240 kgCO_2e per tonne RDF (EXP, 2023). This figure is likely to be conservative, reflecting US-based assumptions and not accounting for potential efficiencies such as green hydrogen use or CO_2 capture and utilisation within the production process.

Applying an RDF yield of 0.33 t RDF/t MSW (as derived in Section 5 based on Surrey's MSW composition data), this gives total SAF production emissions of **410 kgCO_2e/t MSW**.

6.3.2 SAF Combustion Emissions

Once combusted in an aircraft engine, SAF releases carbon dioxide in the same quantity as fossil jet fuel on a mass basis. However, when SAF is produced from biogenic sources such as food waste, wood, or paper, part of these emissions may be considered carbon-neutral depending on the regulatory framework.

For this analysis, the SAF derived from MSW is assumed to contain ~50% biogenic carbon, based on Surrey's MSW composition. As such, only half of the combustion emissions are counted in the net total. Using a fossil jet fuel combustion emissions factor of 3,150 kgCO_2e per tonne of fuel (DESNZ, 2025) and applying the 10% yield and ~50% biogenic adjustment factors, the net SAF combustion emissions are calculated as **154 kgCO_2e/t MSW.**

6.3.3 Avoided Emissions from Fossil Jet Fuel

By replacing conventional fossil jet fuel, the SAF produced avoids the emissions that would have been released from the combustion of petroleum-based aviation fuel. The direct combustion emissions of fossil jet fuel are estimated at 3.15 tonnes CO_2e per tonne fuel (DESNZ, 2025).

Given the rule of thumb yield of 0.1 tonnes SAF per tonne MSW, this equates to avoided emissions of **315 kgCO_2e/t MSW**. This displacement benefit is included as a negative value in the final emissions balance.

6.3.4 MSW to SAF Emissions Summary

Based on a simplified rule-of-thumb yield of 10% SAF per tonne of MSW, the estimated emissions from the FT-SPK production pathway are set out in Table 6-2 below.

Emissions Component	GHG Emissions (kgCO_2e/t MSW)
SAF production	+410
SAF combustion (adjusted for 50% biogenic content)	+154
Gross SAF emissions	**+564**
Avoided fossil jet fuel combustion	-315
Net emissions	**+249**

Table 6-2: MSW to SAF Emissions

This result shows that producing and using SAF from residual MSW leads to **net emissions of 249 kgCO_2e per tonne of MSW**, as shown in Figure 6-2 below.

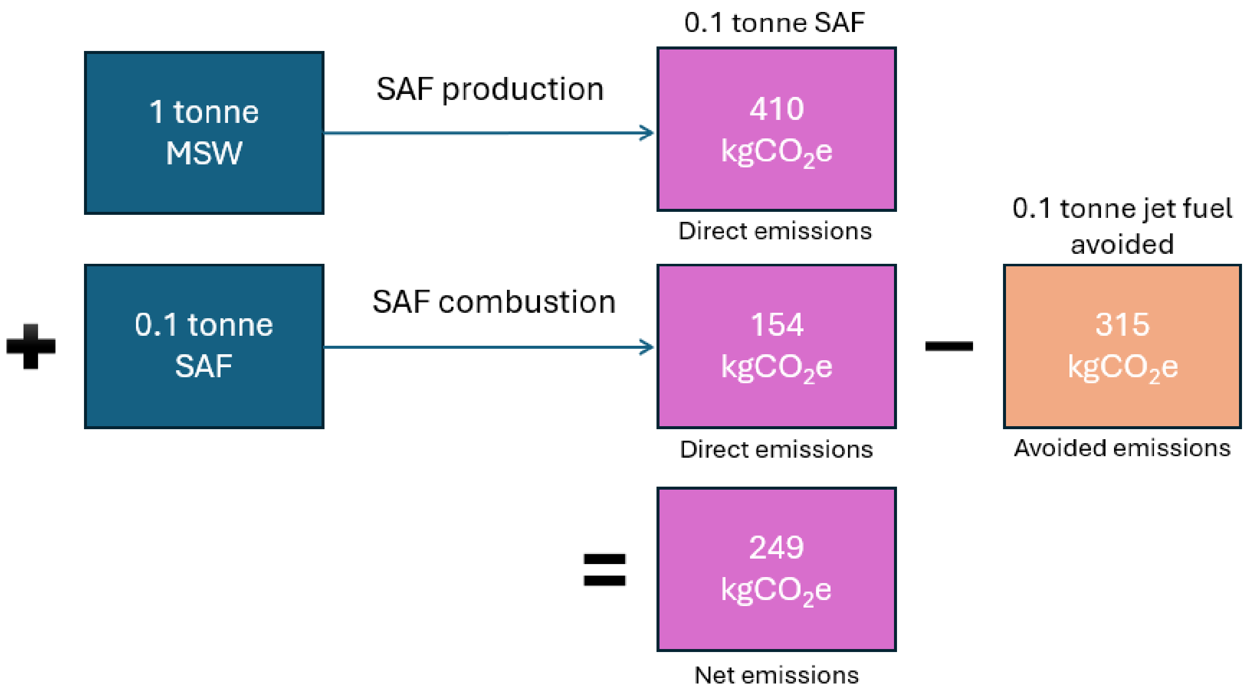


Figure 6-2: SAF Production (FT-SPK) and Combustion Emissions

While actual outcomes depend on feedstock composition, process efficiency, and attribution approach, the MSW-to-SAF scenario analysed here demonstrates meaningful climate benefits relative to the baseline in terms of carbon emissions, with a new GHG emissions saving of **130 kgCO_2e per tonne of MSW**, equivalent to a **34% reduction**.

6.4 Sensitivities and Key Assumptions

The results presented in this section are based on an emissions accounting framework aimed at demonstrating the key factors that influence the emissions savings of using MSW for SAF production compared to conventional energy recovery. The analysis excludes upstream emissions related to MSW collection or oil extraction, downstream emissions from SAF distribution, and non-GHG climate effects such as contrails. While this supports a consistent, high-level comparison, the estimated carbon benefit is sensitive to several key assumptions:

- **SAF Yield:** A fixed yield of 10% SAF per tonne of MSW is assumed, based on literature benchmarks (Royal Society, 2023). Actual yield may vary depending on technology pathway, feedstock pre-treatment, and composition.
- **Biogenic Content:** SAF emissions are adjusted based on the fossil vs biogenic carbon content of the waste. The analysis found that Surrey's residual MSW is approximately 49% biogenic by dry weight, meaning only half of combustion-phase emissions are attributed to net atmospheric CO_2.
- **Jet Fuel Displacement:** Each tonne of SAF is assumed to displace an equivalent energy quantity of conventional fossil jet fuel, with no change in aviation fuel demand, operational efficiency, or blending constraints.
- **Lifecycle Boundaries:** The analysis includes emissions from SAF production and combustion only. It excludes MSW collection, fossil fuel extraction, SAF distribution, and non-CO_2 effects such as contrails.

Alternative Comparison Method: Including Jet Fuel in the Counterfactual

An alternative approach to emissions comparison is to include fossil jet fuel emissions in the counterfactual, comparing *EfW disposal + fossil jet fuel use* against *SAF production and use*. This reflects a full system-level comparison between the current status quo and a SAF substitution scenario.

Under this method, both pathways account for jet fuel combustion emissions (either from fossil or SAF), and the relative saving comes only from the lower carbon intensity of SAF, particularly due to its biogenic content. This avoids attributing a benefit to SAF from "displacing" fossil fuel, but makes it harder to compare emissions solely from waste treatment choices.

This approach is more consistent with macro-level decarbonisation modelling, but less aligned with how SAF projects are typically assessed from a waste management or project-scale perspective. For this study, the waste treatment perspective is used for clarity and consistency, with this system-level alternative provided for context.

Both methods result in the same estimated net saving of **130 kgCO_2e per tonne of MSW**. The difference lies only in how the emissions are presented, not in the underlying outcome.

6.5 Summary

This section has assessed the climate impact of two MSW treatment routes: EfW incineration and SAF production using the FT-SPK pathway. The analysis was conducted on a per-tonne-of-MSW basis to allow for consistent and accessible analysis across treatment routes. The analysis includes emissions from fuel production and combustion and the benefit of displacing fossil jet fuel, while excluding upstream and downstream lifecycle emissions.

The results indicate that:

- EfW treatment produces an estimated **379 kgCO_2e per tonne of MSW**, after accounting for biogenic content and avoided grid electricity emissions.
- SAF production via FT-SPK results in net emissions of approximately **249 kgCO_2e per tonne of MSW**, after accounting for SAF production emissions, adjusted combustion emissions, and avoided fossil jet fuel use.

This equates to a **34% emissions reduction** compared to the EfW baseline, or a **total saving of 130 kgCO_2e per tonne of MSW**. The majority of this benefit arises from the displacement of fossil jet fuel and the lower effective combustion emissions due to the biogenic fraction of the waste.

These results suggest that SAF production from residual MSW could offer meaningful climate benefits in the HSPG area, especially if sufficient feedstock can be aggregated. The simplified comparison presented here provides a useful baseline for evaluating alternative waste treatment pathways and supports further feasibility work on regional SAF production.

7 Conclusions and Next Steps

7.1 Key Findings

This study has explored the potential to convert residual municipal solid waste (MSW) into sustainable aviation fuel (SAF) as part of the decarbonisation strategy for the Heathrow Strategic Planning Group (HSPG) area. Using composition data for Surrey's residual waste stream and published SAF yield and emissions data, we have assessed the technical feasibility and carbon impacts of producing SAF from waste-derived feedstocks.

Three SAF production pathways were evaluated: Fischer-Tropsch (FT-SPK), Alcohol-to-Jet (ATJ-SPK), and an optimised 'Maximum Yield' hybrid pathway, with the FT-SPK selected pathway as the default example for emissions calculations due to its relative maturity at commercial scale. All pathways begin with the gasification of refuse-derived fuel (RDF), but differ in their upgrading processes, feedstock compatibility, and GHG emissions. Emissions outcomes were compared to the current baseline of energy-from-waste (EfW) incineration and continued use of fossil jet fuel.

Key findings include:

- Surrey's residual waste could currently produce an estimated **4,800 to 20,800 tonnes of SAF per year**, depending on the pathway and feedstock constraints.
- In a High Impact scenario where policy changes significantly reduce residual waste volumes or alter composition, annual SAF production potential could fall to around **4,200 to 18,000 tonnes of SAF per year**.
- Heathrow Airport's expected annual SAF demand of approximately **700,000 tonnes by 2030** demonstrates that Surrey's residual waste alone cannot meet local demand, underscoring the need for **broader regional collaboration and a mix of SAF production routes**.
- Across the full HSPG area, residual household waste arisings total around 330,000 tonnes per year, equivalent to 110,000 tonnes of RDF and up to **33,000 tonnes of SAF**, exceeding the lower threshold for viable commercial SAF plant scale.
- Greater London generates approximately 2.5 million tonnes of residual household waste per year, potentially yielding **250,000 tonnes of SAF** and highlighting the strategic value of London's waste stream in supporting national SAF targets.
- **The biogenic content** of waste plays a key role in reducing net combustion emissions. SAF derived from MSW in Surrey is estimated to be approximately 49% biogenic.
- **SAF yield per tonne of MSW** ranges from ~0.03 (ATJ) to ~0.11 (Max Yield hybrid), depending on pathway efficiency, feedstock compatibility, and the proportion of biogenic content.
- **GHG emissions** for MSW-to-SAF are estimated at **249 kgCO_2e per tonne of MSW**, compared to **379 kgCO_2e per tonne** for EfW treatment and fossil jet fuel use. This equates to a **reduction of approximately 34%,** or a **total saving of 130 kgCO_2e per tonne of MSW.**
- As the UK electricity grid continues to decarbonise, the carbon offset from electricity generation via EfW will diminish, thus further **enhancing the relative emissions benefit of MSW-to-SAF**.
- Producing SAF from residual waste supports multiple policy priorities, including **circular economy objectives, reduced fossil fuel dependency, and diversion of waste from landfill**.

- **Co-location opportunities near Heathrow** offer potential for integration with existing fuel infrastructure and access to a dense regional waste catchment, supporting economies of scale.

These findings suggest that MSW-to-SAF is a technically viable and climate-positive option for the HSPG area. However, an area significantly larger than Surrey will likely be needed to provide sufficient feedstock volumes. Practical delivery will depend on land availability, planning constraints, feedstock access, and market development, and will benefit from coordinated action across HSPG, London, and the wider South East.

7.2 Pros and Cons of Developing an MSW-to-SAF Plant Near Heathrow

A strategic assessment of the broader implications of using residual MSW for SAF production in the HSPG area is summarised in Table 7-1 below.

Opportunities	Constraints
Large volumes of residual MSW generated within short transport distances	High land values and development constraints around Heathrow
Co-location near Heathrow supports efficient SAF distribution into airport supply	Long-term waste contracts may limit near-term feedstock availability
Potential to repurpose existing EfW or waste transfer infrastructure	MSW-to-SAF technologies not yet widely deployed at commercial scale
Supports compliance with UK SAF mandate and reduces reliance on fossil jet fuel	Project delivery would require multi-stakeholder alignment across boroughs
Alignment with circular economy principles and landfill diversion goals	Requires access to low-carbon hydrogen and upgraded electricity/gas infrastructure
Eligible for emerging SAF incentives, mandates, and funding schemes	Risk of delays due to permitting, planning, or local opposition
Potential to create regional investment and skilled green jobs	High fossil content in plastic-rich waste may affect SAF certification or sustainability classification
Ability to displace EfW incineration, whose carbon intensity remains significant and will soon be subject to UK ETS penalties	SAF production emissions highly sensitive to feedstock quality, process efficiency, and attribution assumptions
Declining value of EfW-generated electricity as the UK grid decarbonises	SAF plants require major upfront investment and take longer to develop than conventional waste treatment options
SAF production offers a carbon benefit of ~34% compared to EfW disposal route	Stricter waste policies and higher recycling targets may reduce suitable residual waste, risking long-term supply for SAF

Table 7-1: Opportunities and Constraints of Using MSW to Produce SAF in the HSPG Area

7.3 Other Considerations

In practice, delivery of MSW-to-SAF projects will depend on wider institutional, regulatory, and infrastructure factors. For example, waste disposal is the statutory responsibility of local authorities, but many are constrained by long-term contracts or limited control over residual waste treatment.

The proximity of Heathrow offers a clear demand centre, but limited industrial land and planning constraints may restrict development options. The SAF policy landscape is evolving, particularly regarding the treatment of fossil carbon in feedstocks, which could influence eligibility under the SAF mandate and international certification schemes.

Hydrogen and electricity supply will be critical enablers. SAF production via the FT-SPK pathway requires significant quantities of low-carbon hydrogen, and local grid capacity (near Heathrow or alternative sites) must be factored into future feasibility assessments.

7.4 Suggested Next Steps

To support the potential development of MSW-to-SAF in the HSPG area, the following actions are recommended:

- Stakeholder Engagement: Initiate early discussions with local authorities, waste contractors, SAF producers, and Heathrow Airport to align interests and assess appetite for collaboration. These conversations can help shape delivery models and identify early opportunities or barriers.
- Feedstock Security Analysis: Refine projections for residual MSW quantities, composition, and contract durations across HSPG boroughs and neighbouring areas. This will help assess the long-term availability and quality of feedstock to support plant investment decisions.
- Feasibility Study: Commission a more detailed technical and spatial assessment to evaluate viable SAF plant locations, hydrogen and energy supply options, and indicative capital costs. This should include a review of grid connection capacity, land availability, and integration with existing infrastructure.
- Policy Clarification and Advocacy: Engage with national stakeholders (e.g. DESNZ, DfT) to clarify how MSW-derived SAF fits within evolving sustainability frameworks and policy mandates. This includes eligibility under the SAF mandate, treatment of fossil carbon, and interaction with waste hierarchy obligations.
- Explore Funding Opportunities: Monitor development of the SAF Revenue Certainty Mechanism (RCM) and be alert to successor schemes to the Advanced Fuels Fund (AFF), which supported early-stage SAF projects until 2024. Also explore broader support through GIGA, the National Wealth Fund, and private sector partnerships to de-risk development and enable capital investment.
- Evaluate Strategic Partnerships: Identify delivery models that combine waste management, SAF production, and end-user commitments, for example public-private partnerships or consortia including local authorities, fuel producers, and airlines. Early identification of partners can accelerate project development and improve investment confidence.

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Appendix A - Projected MSW Composition Scenarios (2030)

This appendix provides supporting detail for the waste composition modelling described in Section 5.1.2, including:

- Annual reduction assumptions per material category
- Resulting waste composition forecasts under Low, Medium and High Impact scenarios (2030)
- Implications for SAF-relevant feedstock availability

The following compound annual reductions were applied to each relevant waste fraction from 2027 to 2030 under three scenarios:

Material	High Impact	Medium Impact	Low Impact
Food waste	-5.0%	-3.0%	0.0%
Paper	-4.0%	-2.0%	0.0%
Wood	-2.0%	-1.0%	0.0%
Plastics	-6.0%	-4.0%	-2.0%
Metals / Glass	-2.0%	-1.0%	0.0%
Other	-2.0%	-1.0%	0.0%

The table below shows the modelled composition of Surrey's residual waste stream in 2030 under each scenario, based on 2023/24 baseline volumes of 185,000 tonnes:

Material	2023/24 Baseline		Low Impact (2030)		Medium Impact (2030)		High Impact (2030)	
	Tonnes	%	Tonnes	%	Tonnes	%	Tonnes	%
Food waste	53,200	29%	53,200	29%	48,500	28%	45,600	28%
Paper	25,800	14%	25,800	14%	24,300	14%	22,800	14%
Wood	2,610	1%	2,610	1%	2,530	1%	2,450	1%
Plastics	28,000	15%	26,400	14%	24,800	14%	23,300	14%
Metals / Glass	15,400	8%	15,400	8%	14,900	9%	14,500	9%
Other	60,000	33%	60,000	33%	58,200	34%	56,500	34%
Total	**185,000**	**100%**	**183,000**	**100%**	**173,000**	**100%**	**165,000**	**100%**

Appendix B - RDF Conversion and Yield Estimates

This appendix provides further detail on the conversion of waste composition data into Refuse-Derived Fuel (RDF) equivalents for SAF production, including:

- Moisture content assumptions by material type
- Estimated RDF-relevant dry weight from Surrey's baseline MSW
- Projected RDF yield under 2030 future composition scenarios

These values support the SAF production potential estimates presented in Section 5.1.3.

Moisture contents are drawn from published values from IEA Bioenergy Task 36: 'Characterisation of MSW for Combustion Systems' (SINTEF Energy Research, 2001). These assumptions are used to convert from reported wet weight to RDF-relevant dry weight suitable for thermochemical processing.

Material Type	Moisture Content Assumed	Notes
Plastics	0%	Fossil-based plastics, assumed dry
Paper & Card	6%	Based on typical moisture levels in kerbside waste
Wood	7%	Includes non-garden waste wood
Food Waste	67%	High moisture content makes gasification inefficient without extensive drying
Textiles	5%	Based on average across synthetic and natural fibres
Metals / Glass	N/A	Not processed for RDF
Other	N/A	Composition too varied - excluded unless noted

Using Surrey's confirmed residual MSW composition of 185,000 tonnes , and applying moisture content assumptions as above, the following RDF-relevant dry weights were calculated for Surrey:

Material Type	Wet Weight (Tonnes/year)	Moisture Content (%)	RDF-Relevant Weight (Tonnes/year)
Plastics	28,014	0%	28,014
Paper & Card	25,814	6%	24,265
Wood	2,606	7%	2,424
Food Waste*	0*	67%	0

Textiles	6,810	5%	6,470
Total	**63,244**	-	**61,172**

Food waste was excluded from the final SAF-relevant feedstock total in this table due to uncertainties over moisture reduction and processing losses for gasification in the FT pathway. However, it may still be relevant to ATJ pathways.

This results in a baseline RDF yield of approximately 0.33 tonnes RDF per tonne MSW, based on 185,000 tonnes of MSW and 61,172 tonnes of RDF.

Applying the projected composition scenarios developed in Section 5.1.2 and the same moisture content assumptions, estimated RDF feedstock quantities for each scenario are:

2030 Scenario	Estimated RDF-Relevant Feedstock (t)
Low Impact	59,525
Medium Impact	56,444
High Impact	53,487

These values were used to calculate SAF production potential by pathway in Section 5.1.3.3.