



sharing responsibility
for Birmingham

..... waste solutions for Birmingham

**MUNICIPAL WASTE
HAZARDOUS WASTE
COMMERCIAL WASTE
SPECIALIST INDUSTRIAL SERVICES
RECYCLING AND RECOVERY
PACKAGING WASTE COMPLIANCE**





Veolia Environmental Services is an international, market-leading waste management company providing a comprehensive range of services for organisations and people across the UK. We anticipate and evaluate new legislation, develop and assess environmental technologies and research our customers' practical requirements to provide successful and sustainable waste management services.

We are part of Veolia Environnement, a world leader in environmental services and the only company to provide a full range of integrated solutions across water, waste management, energy and transportation sectors. Combining our global experience and local knowledge we can work effectively with commercial and public organisations of all sizes and sectors, while caring for the communities and the environment in which we operate.

building a waste management partnership

Birmingham's 1 million residents create more than 550,000 tonnes of waste every year. In line with government legislation, the city council wanted to ensure that where waste could not be recycled or composted, as little as possible went to landfill.

In 1994, Veolia ES Birmingham Ltd was established as a strategic partnership between Veolia Environmental Services and Birmingham City Council. The integrated contract aims to manage the city's waste in a co-ordinated and efficient way, maximising recycling and using the residual waste to produce energy.

The partnership agreement centres on an Energy Recovery Facility (ERF), whilst committing both parties to increasing the city's recycling performance in line with stringent targets of 34% by 2012 and 40% by 2026.

Birmingham's Energy Recovery Facility (ERF) is capable of processing 350,000 tonnes per annum of waste that cannot be recycled or composted and produces 25mw of electricity for the National Grid.



Opened in 1996, the ERF operates 24 hours a day, 7 days a week, supplying enough electricity to power 25,000 homes in strict compliance with EU and UK emissions standards. The facility was built with a capacity much lower than the total waste generated in the city, to ensure that recycling initiatives are not compromised. It has since become a landmark building in Birmingham with its bold architecture and an award-winning lighting scheme that illuminates the plant at night.

The ERF extracts 5000 tonnes per annum of ferrous metals from the recovery process and further amounts of ferrous and non-ferrous metals are extracted from the incinerator bottom ash (the material

produced from incineration). This results from crushing, trommelling and screening the material and produces a graded, quality aggregate substitute.

The incineration process produces a small amount (less than 3%) of alkaline Air Pollution Control Residues (APC). This is transported from the site in bulk tankers and used to neutralise acidic wastes from other industrial processes.

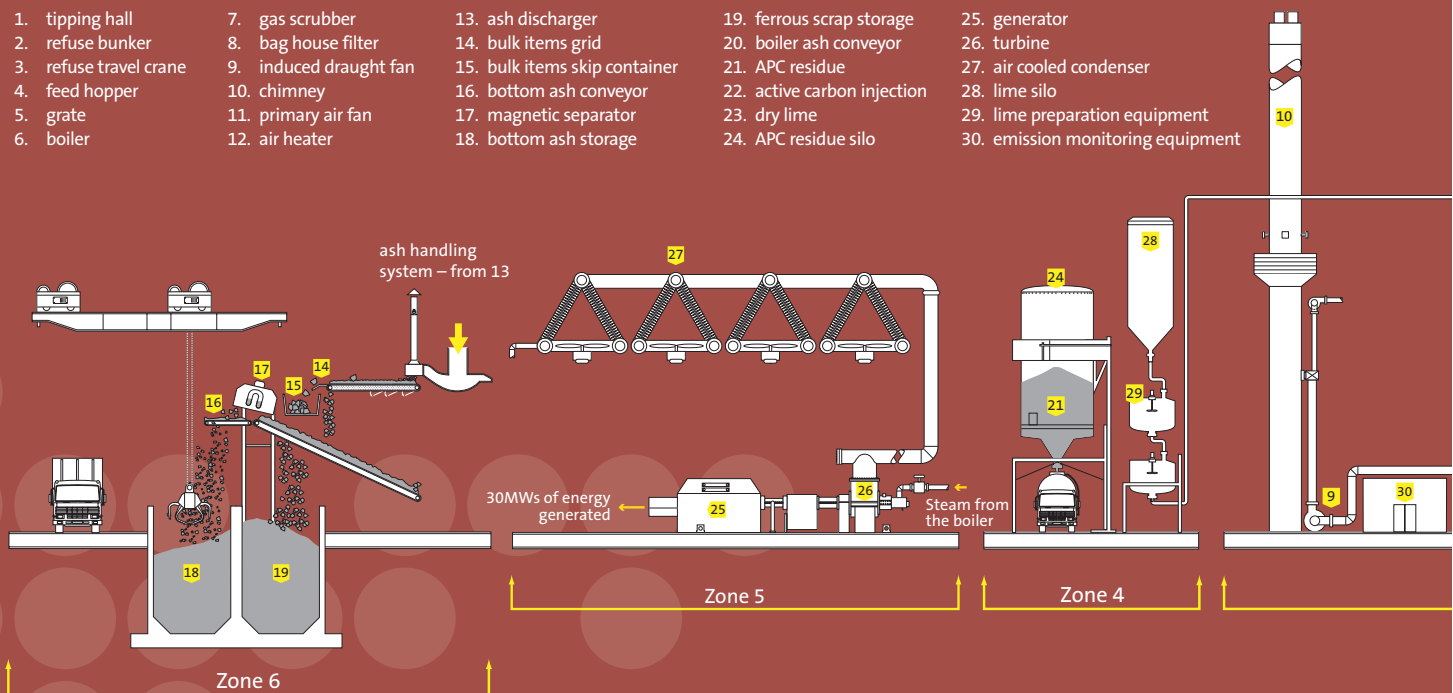
Under a government scheme to support renewable energy through such facilities, Veolia ES Birmingham has a Non-Fossil Fuel Obligation (NFFO) contract and a large proportion of this financial benefit is passed to the city council.

how does the ERF work?

- Waste from households and some local businesses is brought to the ERF where it is tipped into a waste storage bunker
- An overhead crane lifts it into a feed hopper at a rate of 23.5 tonnes per hour
- The hopper feeds the waste into an incineration unit where it is burned at temperatures in excess of 850°C
- A large boiler situated above the combustion grate generates superheated steam, which drives the turbine, generating electricity for the National Grid
- Ammonia in water is introduced to the furnace to treat the NOx emissions in the gases. Lime and activated carbon are used to neutralise the acidity of the flue gas and absorb other pollutants
- The boiler gases pass through a filter house where particulate (dust) is removed by filter bags. Particulate collected in this process is then stored in a silo for separate processing and safe disposal
- The cleaned gases, which are constantly monitored to ensure they meet strict environmental regulations and legislation, are then released through the chimney
- An electromagnetic drum separator removes ferrous metal from the ash that is produced from the incineration process. The metal is delivered to a local company for recycling. The remaining ash goes into a bunker and is transported off site for further processing before being used as an aggregate for road building
- Monitoring systems operate 24 hours a day to allow Veolia ES Birmingham to ensure the performance of the ERF meets all EU and UK environmental regulations and legislation.

Key to plant diagram

- | | | | | |
|------------------------|------------------------|-------------------------------|-----------------------------|-----------------------------------|
| 1. tipping hall | 7. gas scrubber | 13. ash discharger | 19. ferrous scrap storage | 25. generator |
| 2. refuse bunker | 8. bag house filter | 14. bulk items grid | 20. boiler ash conveyor | 26. turbine |
| 3. refuse travel crane | 9. induced draught fan | 15. bulk items skip container | 21. APC residue | 27. air cooled condenser |
| 4. feed hopper | 10. chimney | 16. bottom ash conveyor | 22. active carbon injection | 28. lime silo |
| 5. grate | 11. primary air fan | 17. magnetic separator | 23. dry lime | 29. lime preparation equipment |
| 6. boiler | 12. air heater | 18. bottom ash storage | 24. APC residue silo | 30. emission monitoring equipment |





..... a strategic waste management network

Energy Recovery is only part of Birmingham's strategic approach to managing waste. Thanks to the infrastructure in place in the city, less than 20% of all municipal waste arisings go to landfill - one of the lowest rates in the UK. Increased kerbside and household recycling will reduce this rate even further.

..... transfer stations

We also operate two major waste transfer stations in the north and south of the city handling 275,000 tonnes per annum.

These facilities act as bulking stations for materials from both kerbside collections and HRCs, increasing efficiency and reducing traffic movements and congestion across the city. Recyclables are then transported via bulk vehicles with a 25 tonne capacity, around three times more than an ordinary refuse collection vehicle, to accredited recycling processors. General waste from household collections is also processed here and then taken to the ERF or to landfill.

journey of waste



household recycling centres



Around 50,000 tonnes per annum are diverted from landfill via the HRCs and the materials are transferred to recyclers, reprocessors and some charities.

Veolia ES Birmingham is responsible for maintaining and operating the city's five Household Recycling Centres (HRCs), where local residents can recycle a wide range of materials that are not included in the municipal kerbside collection system. These include wood, metal, hardcore and rubble, car batteries, fridges and freezers, TVs and monitors, gas bottles, engine oil, shoes and textiles. Green waste, paper, card, cans and glass can also be recycled at the HRCs.

meeting the waste management challenge

Veolia ES Birmingham is committed to supporting Birmingham City Council in achieving its waste strategy goals by applying our global experience and expertise to the local situation and working in close partnership with the council. Our strategic partnership ensures that a number of vital environmental objectives are achieved:

RECYCLING

Recycling is increased through kerbside collection and use of household recycling centres

ENVIRONMENTAL AWARENESS

Waste is managed and processed within the city boundaries, minimising the environmental implications of transfer and haulage

MINIMISE LANDFILL

Use of scarce and expensive landfill is minimised. Investment in alternative methods addresses both these issues and provides an environmentally responsible solution

ENERGY RECOVERY

Energy is recovered from the waste

REDUCE EMISSIONS


The use of fossil fuels is reduced, thereby both conserving them, and reducing the emissions that would result from burning them

REDUCE GREENHOUSE GASES

The release of methane - a greenhouse gas that is a naturally occurring result of the landfill process - is reduced

FERROUS METALS

Ferrous metals are recovered for recycling



community focus

Veolia ES Birmingham takes corporate and social responsibility seriously and is involved with a number of local organisations to help improve community facilities and foster good relationships.

Employment within the business has grown significantly over the last few years as we increase the amount of recycling services offered to Birmingham City Council.

Regular visits and tours of the ERF are held for local interest groups, technical, educational and political groups. Due to the nature of the site, tours for under 16s are not permitted, but we aim to help with waste management education in school groups through investment in online resources.



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