

Introduction

The Eco Park Surrey is a waste management and processing site near Shepperton in Surrey which is operated by SUEZ Recycling and Recovery UK on behalf of Surrey County Council.

It consists of four separate facilities:

A community recycling centre - this is a place for local residents to bring household and garden items for recycling and disposal.

A recyclables bulking facility - where local refuse collection vehicles deposit kerbside recycling, ready for it to be bulked up and transported on. This area is also used for bulking up recyclables deposited at the community recycling centre.

An anaerobic digestion (AD) facility – this is used to treat food waste from across Surrey and convert it into biogas, which is used to generate energy in a combined heat and power engine. The food waste is processed, to remove non-organic items, and shredded. Water is added to the mix, which is then pasteurised and goes into the digester tanks. Microbes in the tanks breakdown the food waste to produce a biogas. The AD process also produces a digestate, which is a solid, soil-like substance, which can be used as a fertilizer or soil improver.

A gasification facility – this is used to process black bag waste from homes in Spelthorne, Runnymede and Elmbridge. Black bag waste is the term for all household waste that's not been separated out for recycling by residents. The waste is pre-sorted to remove any large items, metals or other recyclable items, or hardcore (for example bricks or concrete) that can't be processed. What's left is shredded to produce a refuse derived fuel (RDF). The RDF goes into the gasification unit, which contains a fluidized sand bed heated to at least 700 degrees Celsius. Within the sand bed, the RDF breaks down to release a synthetic gas (syngas). The gas rises to the top of the unit, where oxygen is added and the gas is ignited at temperatures above 850 degrees Celsius. This is used to heat water in a boiler to produce steam, which drives a turbine and generates electricity.

Overall, the Eco Park will produce enough energy from waste to power the whole site, with any excess electricity generated going into the National Grid. The total electricity produced will be enough to power 8,000 homes.

What emissions are released and who is monitoring them?

On site, there is a 49 metre-high stack (chimney), through which emissions will be discharged into the atmosphere from the AD and gasification processes. Emissions from the stack are mostly steam, with oxygen, nitrogen, carbon dioxide and tiny amounts of pollutants that are within the Environment Agency's permitted levels.

All emissions are carefully and constantly monitored and the information is used to help operate the facility as effectively as possible. Proper management of the processes can improve emissions quality. Within the site's permit to operate, the Environment Agency has set strict levels for the emissions and data will be provided to our regulator to be monitored constantly.

What are the pollutants and how are they managed?

Oxides of nitrogen

Oxides of nitrogen, which includes both nitrogen dioxide and nitrogen monoxide, and are known as NO_x, are formed whenever any substance is combusted in air. This is because the air we breathe contains both nitrogen (78%) and oxygen (21%), which combine during combustion. Levels of NO_x can be managed by ensuring the correct temperature and oxygen levels in the gasification process. After the gasification process, urea is added to chemically change the NO_x to nitrogen, oxygen and water. In addition, a catalytic converter (similar to the sort fitted to car exhausts) is used in the boiler, which helps to remove NO_x.

Carbon Monoxide

Carbon Monoxide, or CO, is produced when waste does not break down sufficiently. To help reduce levels of CO, the pre-treatment process will sort and shred the waste into refuse derived fuel effectively so it breaks down completely in the sand bed. In addition, the temperature in the sand bed, as well as oxygen levels, will be monitored constantly to maintain correct levels of CO.

Acidic Gases

Many of the things we throw away, including plastics, contain sulphur or chlorine. When these are broken down at temperature they release sulphur dioxide and hydrogen chloride, known as acidic gases. Within the gasification process, levels of acidic gases are constantly monitored and lime, which is alkaline, is added at various stages to neutralise them.

Particulates

Particulates which includes micro particulates known as PM_{2.5} (less than μm) and PM₁₀ (less than 10 μm) are captured towards the end of the gasification process using bag house filters.

How are emissions monitored?

Within the Eco Park, emissions are monitored directly by the Continuous Emissions Monitoring System (CEMS). This system is fitted inside the stack so it monitors the flue gas directly, before it is released into the atmosphere. The CEMS equipment is a dual system, meaning there are two sets of equipment monitoring constantly so there is always a back-up in case one of the systems is off line or required for maintenance.

The CEMS measures 13 different substances, although only six of these are required by our regulator, the Environment Agency. The information from the CEMS is available to the EA constantly, via web access and will be published on our website when the Eco Park is operational.

In addition to providing information to the EA for regulatory compliance, the CEMS also allows our operations team to monitor the processes. The data provided by the monitoring systems gives useful feedback on how the processes are operating, thereby allowing the team to safely and efficiently run the plant.

In addition to the CEMS providing on site analysis, for the last two years, the air quality has been monitored off-site at a measuring station in Haslett Road. This has helped provide a background level of air quality in the area. For the last calendar year, the results showed that air quality in the area was within the required limits, which are set by the EU.

What happens if there's an incident on site?

As part of our environmental permit granted by our regulator, the Environment Agency, we were required to submit an Accident Management Plan. This outlines the measures we have in place to prevent any incidents that could possibly cause pollution, but also how we would handle any incident in the unlikely event that one should occur. The Accident Management Plan has been reviewed and accepted by the EA.

In addition to the Accident Management Plan, we are required to have completed a Hazard and Operability (HAZOP) study, which ensures that all possible modes of failure have been considered and addressed. All HAZOPs are also subject to inspection and review by our regulator and are a condition of our operating permit.

The team at the Eco Park Surrey are working to both the high standards of both the energy division of SUEZ and the best practice standards from Surrey Fire and Rescue service. Within this we are adopting, and fully integrating into our incident procedures and training, the principles and practices of JESIP (Joint Emergency Services Interoperability Principles) and M/ETHANE, which is now the recognised common model for passing incident information between the emergency services and their control rooms. This will ensure that the SUEZ team are fully trained on how to manage any incidents or credible scenarios.

Will the plant release odours?

The gasification and anaerobic digestion (AD) facilities are the two areas likely to be accepting waste that could cause odours. Both of these facilities are completely enclosed and have been designed specifically to minimise odours escaping into the atmosphere. Mechanisms include fast-acting shutter doors, carbon filtration and an odour control system which uses de-ionisation to neutralise odours. In addition, the AD tipping hall, which accepts food waste, will be kept at a slight negative air pressure to help prevent air being released into the outside area.

Will the plant be noisy?

The gasification and AD facilities are enclosed and the modern technology is designed to operate as quietly as possible. An acoustic fence has been fitted around the entrance to the gasification tipping hall, to further reduce the noise of the vehicles tipping waste inside the building.

Permitted noise levels are set out in the site's planning permission. There are different noise levels permitted for daytime weekdays, weekends and evenings to ensure the minimum disturbance to the local community. There are also different permitted noise levels for different octaves measured at specific heights.

Noise is measured as a contribution to background noise at two sensitive receptors, which are Hawthorne Way and Charlton Lane, as these are the nearest residential properties. The permitted noise levels vary between approximately 20dB for overnight and 60dB during weekdays.

A noise comparison website (<http://www.industrialnoisecontrol.com/comparative-noise-examples.htm>) describes 60dB as being similar to a 'conversation in restaurant, office, background music'.

How is the site managed and operated?

The gasification and AD facilities will have staff on site 24/7 throughout the year, to monitor and manage the processes.

The day to day management and operation of the site follows a methodology used by leading industry organisations, as well as the Emergency Services. It involves running a strategic, tactical and operational model where differing disciplines and teams have a clear understanding of each others' operating responsibilities. This allows all teams to recognise where support is needed, be empowered to seek help and ensure processes and situations are resolved to a satisfactory degree.

What are the hours of operation?

There are different hours of operation for each of the four facilities at the Eco Park, and these are detailed in the planning permission.

Community recycling centre

- Monday to Saturday – 8am to 4pm
- Sunday – 9am to 4pm

Closed on Christmas Day, Boxing Day and New Year's Day.

Recyclables bulking facility

- Monday to Saturday – 7.30am to 6pm (access to site by HGVs permitted from 7am)
- Sundays and Bank Holidays – 8am to 5pm, but only waste from the community recycled centre is permitted

Closed on Christmas Day, Boxing Day and New Year's Day.

The gasification and anaerobic digestion processes will run 24/7 and there will be staff on shift to monitor and manage this. However, there are restrictions on when vehicles transporting waste can enter or exit the site.

Gasification facility – waste deliveries can be accepted during the following times/ days:

- Monday to Saturday – 7.30am to 6pm
- Sundays and Bank Holidays – 8am to 5pm

Anaerobic digestion facility – waste deliveries can be accepted during the following times/ days:

- Monday to Friday – 7.30am to 6pm
- Saturday – 7.30am to 12pm
- Sundays – no deliveries accepted
- Bank Holidays – 8am to 12pm

Both the gasification and AD plants will be closed for deliveries on Christmas Day, Boxing Day and New Year's Day.

Why do you need a flare?

There is a small flare on site, as part of the AD process. This is to enable us to safely release any excess biogas produced in the event that the combined heat and power engine is not operating for any reason, ordinarily as a result of routine maintenance.

How will hazardous substances be handled on site?

The Eco Park Surrey is not licensed to take hazardous waste such as radioactive, clinical/ medical, asbestos or contaminated waste. Any other substances, such as cleaning products, will be handled in accordance with COSHH regulations.

Will there be an increase in HGV traffic?

In comparison with traffic volumes before the Eco Park was developed, it is expected that HGV traffic volumes will be lower once the site is completed. This was outlined in the original planning application for the site.

The table below shows the average daily movements (counts in and out as separate movements) of HGVs and LGVs, in the different phases.

Phase of the Eco Park	Average number of vehicle movements
Prior to redevelopment	453 vehicle movements per day
Current operations, plus construction traffic*	256-296 vehicle movements per day
When fully operational	Between 200-250 vehicle movements per day

*Construction traffic varies depending on the work on site.

What will the landscaping look like?

The planning application for the landscaping is still under consideration. The plan is to have gently undulating mounds around parts of the area, with the filtration pond in the middle. The area will be planted with a mixture of mature trees and saplings.

We will share more information on the landscaping when we can.

Are there likely to be any health impacts as a result of living near to the Eco Park?

A thorough Human Health Risk Assessment was conducted as part of the planning application. Following an extensive review of studies, evidence and data, they concluded that the emissions from the Eco Park Surrey development would have a negligible effect on human health.



Working on behalf of



Will there be any community engagement?

Throughout construction, we have engaged with the local community through the community liaison group, and we intend for this to continue as we move into the operational phase.

Once construction is complete, we plan to open a Revive re-use shop at Ivydene Cottage. As with our other Revive re-use shops, this will have a charity scheme where we donate 10% net profits to a charity chosen by local residents and Revive customers. Through this we aim to develop relationships with and support local charities.

We expect to develop relationships with local schools through the Education Centre. Waste and recycling are increasingly important in our society and education is an essential part of reducing the amount of waste we produce as well as learning to put our waste to good use.

We also have the SUEZ Communities Trust, which is open to applications from community bodies in need of financial support. Since 1997, the Trust has donated almost £8.2million to nearly 400 projects within Surrey alone, and over £110 million nationally. In 2018, there were two successful applications near the Eco Park – Spelthorne Sports Cricket Club received £8,950 to fund an all-weather cricket wicket and new showers, and the WR Sports Club in Ashford received £5,000 to refurbish and upgrade their washrooms and shower facilities.

We have also been working with the local Scout group to help improve their facilities on site. We are open to discussion with other members of the community who would like to work with us or who would like our support.