



LITTLEBROOK POWER STATION



An **RWE** company

FLEXIBLE POWER FROM OIL

Littlebrook Power Station is an oil-fired power station, owned and operated by RWE npower. Located on the bank of the River Thames, it has the ability to generate up to 1245MW of electricity – enough to meet the needs of over 1 million people.

Littlebrook Power Station began operating in 1981, and is the fourth power station to be built on the Littlebrook site since the original station began generating electricity in 1939. Littlebrook's short start-up time means it can begin generating electricity very quickly, providing crucial additional power to the National Grid at times of peak demand.

Littlebrook Power Station operates as an opted out station under the Large Combustion Plant Directive (LCPD). The LCPD enforces strict environmental compliance, setting limits for the amount of sulphur dioxide (SO₂), nitrogen oxides (NO_x) and dust particulates that each coal or oil-fired plant can emit. As an 'opted out' plant, Littlebrook must close by the end of 2015, but will continue to play an important role in keeping the National Grid system balanced until its closure.

RWE npower, part of the RWE Group, is a leading integrated UK energy company. We operate and manage a diverse portfolio of flexible coal-, oil-, biomass- and gas-fired power stations, with the capacity to produce over 11,000MW of electricity.

npower, one of the UK's leading energy suppliers, serves around 6.5 million residential and business customers.

RWE npower renewables is the UK subsidiary of RWE Innogy and is one of the UK's leading renewable energy developers and operators, committed to developing and operating wind farms and hydro plant to produce sustainable electricity. Our current operational wind farms have a combined capacity of over 500MW, with many other projects at various stages of development.

NPOWER BRIGHTER FUTURES

The aim of our npower Brighter Futures programme is to inspire young people, from their first day at school to their first day at work. We develop their skills and knowledge to help make their own choices, and empower them to reach their vision of a 'brighter future' for themselves and for the environment.

npower Brighter Futures brings together npower's education programmes – from primary schools through to universities. This includes our Power Technician Traineeship and Graduate recruitment schemes.

Our programmes focus on environmental education – energy generation, energy efficiency, climate change and sustainability – and includes our award winning npower Climate Cops programme.

We are committed to increasing the pool of Science, Technology, Engineering and Maths talent and meeting the recruitment challenges we face in the energy industry. To find out more about our education commitment and initiatives visit www.npower.com/education. Young children can visit www.npower.com/climatecops to play our interactive energy saving games.



CARING FOR THE COMMUNITY AND THE ENVIRONMENT

Through links maintained with local authorities, conservation groups and educational establishments, Littlebrook Power Station plays an active role in the community.

We support local educational initiatives, environmental projects and also encourage visits to the site from schools and other groups from Kent and South East London.

By extensive monitoring of noise levels, and emissions and discharges into the River Thames, Littlebrook meets its legal obligations set by the Environment Agency. It also maintains its accreditation to ISO 14001, the UK and European Standard for Environmental Management.

The environmental record of Littlebrook is open to public scrutiny through the publication of an independently-verified, annual Environmental Performance Review.

The site is home to a wide variety of river-based wildlife that lives in harmony with the power station, and a number of protected breeds have successful bred on the site, including Black Redstart birds and also Peregrine Falcons.

Littlebrook is the only oil-fired power station in the UK to be retrofitted with equipment called electrostatic precipitators that prevent dust being emitted from the chimney.

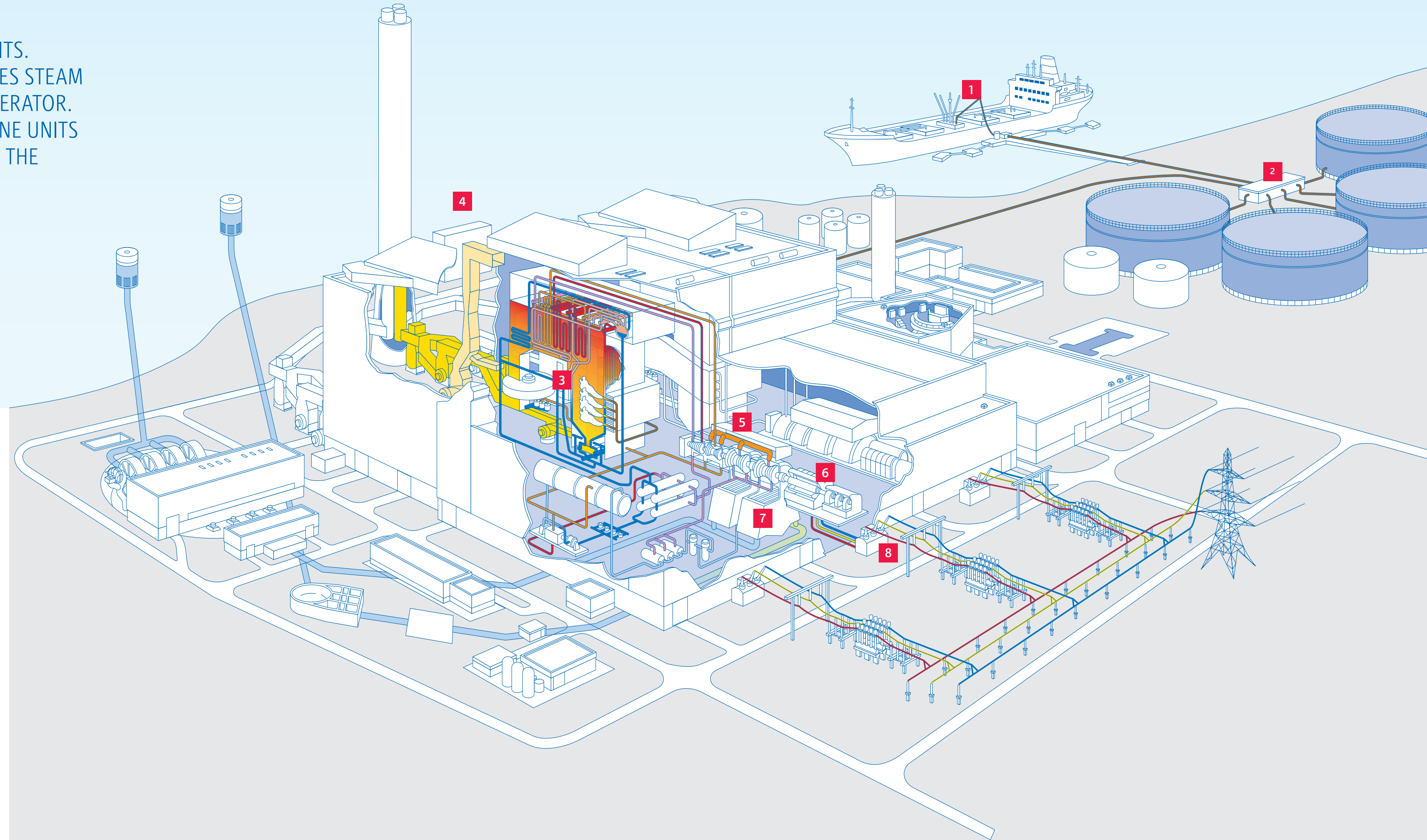




Littlebrook Power Station is a landmark on the River Thames, sited next to the distinctive Queen Elizabeth II Bridge.



LITTLEBROOK HAS TWO TURBINE GENERATING UNITS. EACH UNIT CONSISTS OF A BOILER, WHICH SUPPLIES STEAM TO A TURBINE THAT POWERS AN ASSOCIATED GENERATOR. IN ADDITION, THE STATION HAS THREE GAS-TURBINE UNITS CAPABLE OF PROVIDING ADDITIONAL SUPPORT TO THE NATIONAL GRID SYSTEM WHEN REQUIRED.



1 Oil supply

The oil is delivered to the station by a sea going tanker to a jetty on the river, from which it is piped to large storage tanks.

2 Oil preparation

The oil is filtered and pumped at high pressure to fuel oil heaters, to raise the temperature to 150°C, before being fired in the boilers.

3 Boiler

Each of the two boilers can burn up to 4,500 tonnes of heavy fuel oil each day. The heat produced converts water into steam in the tubes that line the boiler. For greater efficiency, the steam passes through the boiler twice. When it leaves the boiler, the steam is at 160 times atmospheric pressure and at a temperature of 540°C.

4 Electrostatic precipitator

Fine dust, produced by burning heavy fuel oil, is removed from the boiler gases by equipment called an electrostatic precipitator, before passing up the chimney. Littlebrook is the only oil-fired power station in the UK to have such plant retrofitted to meet the latest plant standards.

5 Turbine

The steam from the boiler passes through the blades of the turbine's high pressure stage, turning the blades and turbine shaft at 3,000 revolutions per minute. The turbine shaft is linked to the generator. The steam returns to the boiler for reheating, and then goes back to the turbine's intermediate pressure stage and two low-pressure stages.

6 Generator

Inside the generator, the rotor (an electromagnet) turns inside the stator (made up of copper bars) and creates an electric current. Each of the two turbine generators has an output of 685MW of electricity.

7 Condenser

The spent steam from the turbine exhaust goes to the condenser, where it is turned back into water by passing over tubes containing cold water drawn from the River Thames. The condensate is pumped back to the boiler for re-use, and the cooling water returned to the river.

8 Generator transformer

Electricity from the generator is produced at a voltage of 23,500 volts. For transmission along the National Grid system, the voltage is increased to 400,000 volts in the generator transformer.

HOW TO FIND US

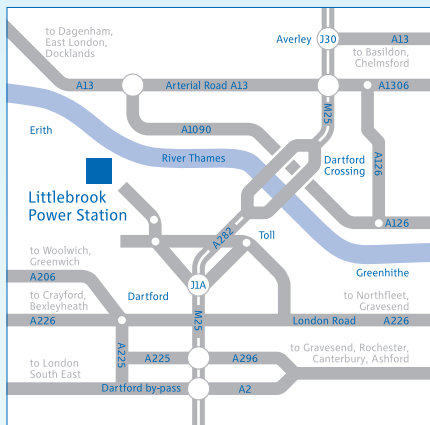
Littlebrook Power Station is next to the southern access to the Dartford Tunnel, and the Queen Elizabeth II Bridge. Slip roads from the A282 give access to the power station.

From the South

Take Junction 1A (Swanscombe) from the A282 (the approach road to the Dartford river crossing).

From the North

Having crossed the Queen Elizabeth II Bridge, move into the left-hand lane and pay at the left-hand toll booth. Take the first exit off the A282 (Swanscombe).



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