



# LITTLE BARFORD POWER STATION



An **RWE** company

## FLEXIBLE POWER FROM NATURAL GAS

Little Barford is a gas-fired power station, owned and operated by RWE npower. Commissioned in 1996 and built on the site of a former coal-fired power station, it generates up to 680MW of electricity, enough to meet the needs of over half a million people – the equivalent of the population of Cambridgeshire.

Little Barford is a Combined Cycle Gas Turbines (CCGT) power station, which is one of them most efficient forms of generation. CCGT stations are highly flexible and reliable, with the ability to start up and shut down quickly in response to changing demand.

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. We are also committed to developing innovative products which allow our customers to improve their energy efficiency and make sustainable energy choices.

RWE npower renewables is the UK subsidiary of RWE Innogy and is one of the leading developers and operators of renewable energy in the UK. Our current operational wind farms have a capacity of over 500MW, with many other projects in 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](http://www.npower.com/education). Young children can visit [www.npower.com/climatecops](http://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, Little Barford Power Station plays an active role in its neighbouring community.

We work closely with our local stakeholders. Through our Local Liason Committee, which brings together representatives from across the community, we ensure an open dialogue with the communities close to our operations.

We also strive to support local projects and charitable causes. We have supported the local hospice for over twelve years, in particular through our health and safety initiatives in which every successful safety inspection results in a £50 donation to the hospice.

We are committed to minimising the environmental impact of our operations. We have undertaken a £100 million investment to improve the efficiency,

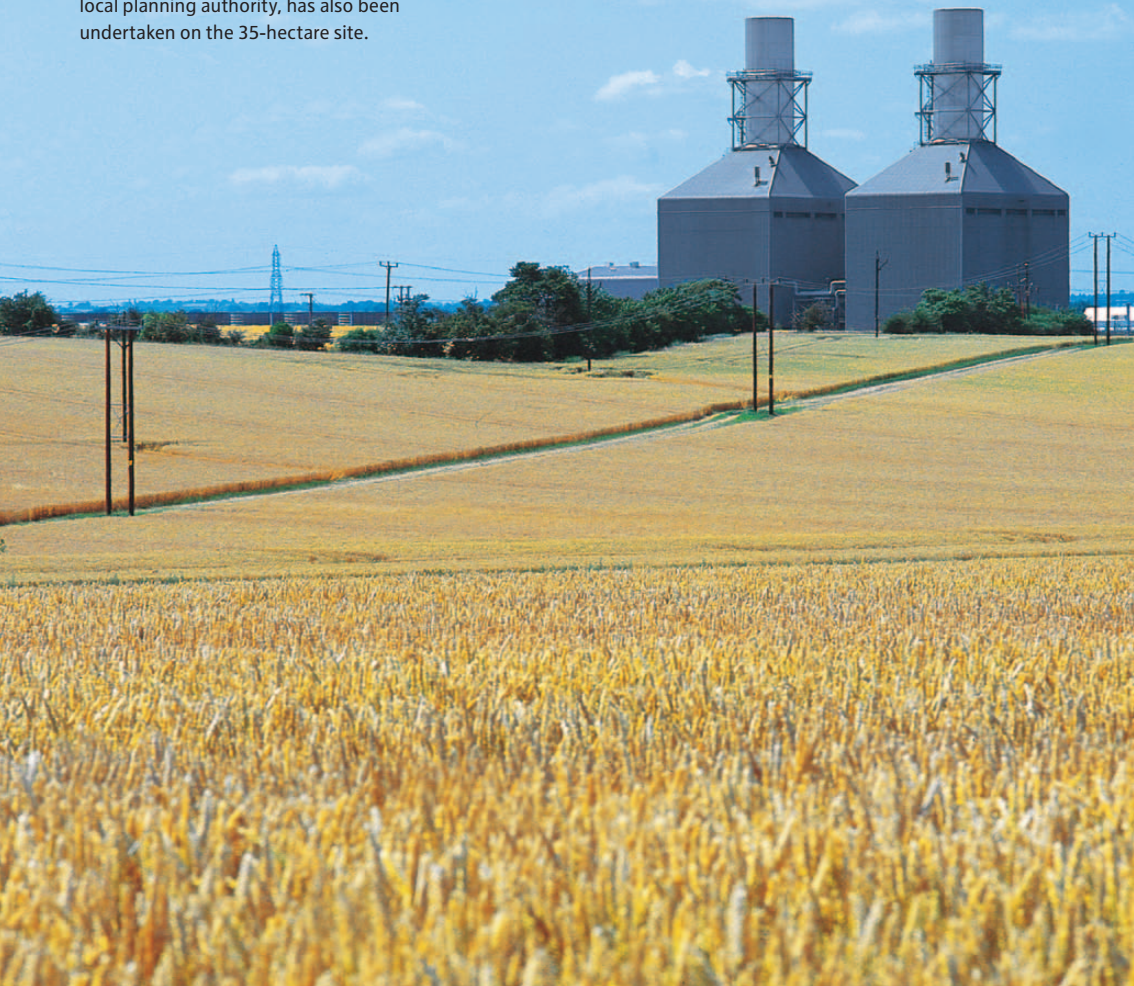
reliability and environmental performance of Little Barford power station. This includes upgrading the station's existing gas turbines, which will cut carbon dioxide emissions by around 40,000 tonnes a year.

We extensively monitor site noise levels, emissions and discharges of cooling water to ensure we meet our legal environmental obligations set by the Environment Agency. Great care has been taken to limit the station's impact on the local community. The machinery and buildings are clad to limit sound levels to carefully monitored limits, and the special design of the cooling towers means that virtually no water vapour is visible throughout the year.

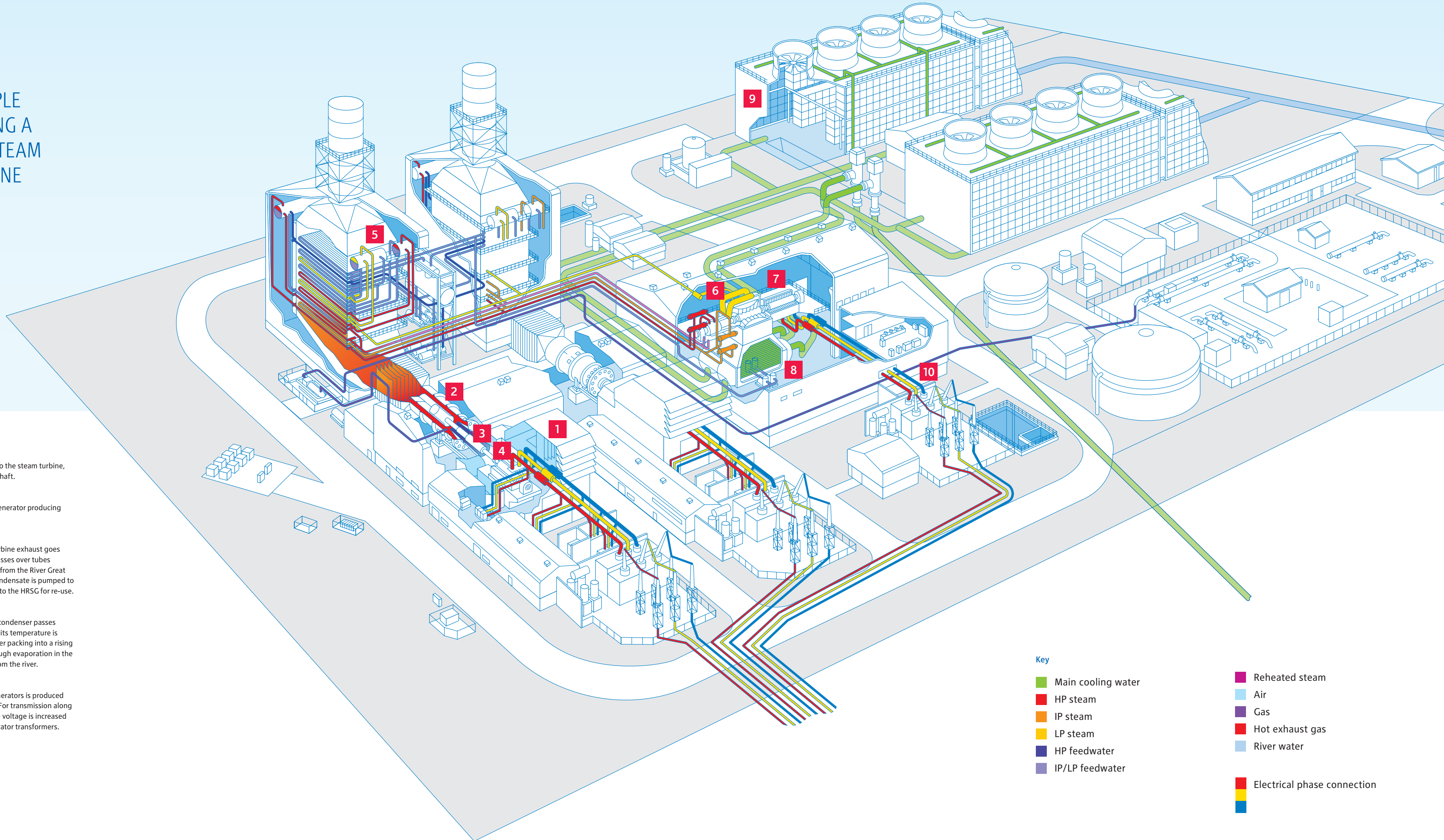




A substantial programme of tree planting, designed in consultation with the local planning authority, has also been undertaken on the 35-hectare site.



LITTLE BARFORD HAS TWO GAS TURBINES – EACH SIMILAR IN PRINCIPLE TO A JET ENGINE AND EACH POWERING A GENERATOR, TWO HEAT RECOVERY STEAM GENERATORS AND ONE STEAM TURBINE LINKED TO ANOTHER GENERATOR.



**1 Filters**

The air needed by each gas turbine is drawn in through an intake filter and then compressed in the turbine compressor.

**2 Combustion chamber**

The compressed air enters the combustion chamber at over 15 times atmospheric pressure. The air is mixed with natural gas and burned in the combustion chamber. The burning air/gas mixture is at a temperature of 1,260°C, hot enough to melt glass.

**3 Gas turbine**

The mixture passes through the blades of the gas turbine – this turns the blades and turbine shaft at 3,000 revolutions per minute. The turbine shaft is linked to the compressor and the generator.

**4 Generator**

Inside the generator, the rotor (an electro-magnet) rotates inside the stator (made up of copper bars) and creates an electric current. Each gas turbine generator has an output of 235MW of electricity.

**5 Heat-recovery steam generator (HRSG)**

On leaving the turbine, the gas (at a temperature of 616°C) is passed to the HRSG – a giant boiler, where 290 tonnes of water is turned into steam every hour. The exhaust gas (now at a temperature of 90°C) is discharged to the atmosphere through the chimney.

**6 Steam turbine**

Steam from the HRSG is fed to the steam turbine, where it rotates the turbine shaft.

**7 Steam turbine generator**

The steam turbine drives a generator producing 260MW of electricity.

**8 Condenser**

The spent steam from the turbine exhaust goes to the condenser, where it passes over tubes containing cold water drawn from the River Great Ouse and condenses. The condensate is pumped to the deaerator and then back to the HRSG for re-use.

**9 Cooling towers**

The warmed water from the condenser passes to the cooling towers, where its temperature is reduced by being sprayed over packing into a rising stream of air. Water lost through evaporation in the cooling towers is made up from the river.

**10 Generator transformer**

Electricity from the three generators is produced at a voltage of 15,600 volts. For transmission along the National Grid system, the voltage is increased to 400,000 volts in the generator transformers.

**Key**

- Main cooling water
- HP steam
- IP steam
- LP steam
- HP feedwater
- IP/LP feedwater
- Reheat steam
- Air
- Gas
- Hot exhaust gas
- River water
- Electrical phase connection
- 
-

# HOW TO FIND US

Little Barford Power Station is just east of the A1, on the B1043 south of St Neots, Cambridgeshire.

## From Cambridge and the east

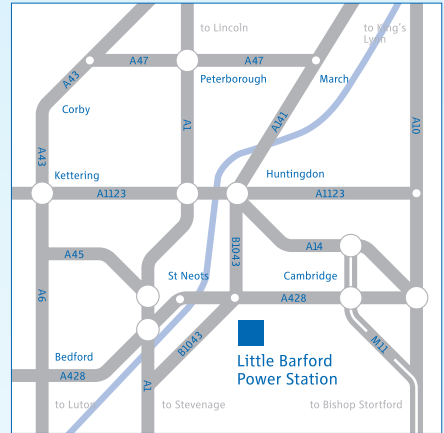
Take the A428 west towards Bedford and at the roundabout where the A428 intersects the B1043 turn left towards Little Barford. The power station is on the left.

## From Bedford and the west

Take the A428 and A421 towards the A1, turn north onto the A428 towards Cambridge. At the second roundabout, where the A428 intersects the B1043, turn right towards Little Barford. The power station is on the left.

## From Peterborough and the north

Take the A1 south, and then join the A428 towards Cambridge. At the second roundabout, where the A428 intersects the B1043, turn right towards Little Barford. The power station is on the left.



## RWE npower

Little Barford Power Station  
Little Barford  
St Neots  
Huntingdon  
Cambridgeshire  
PE19 6YT

T +44 (0)1234 372011  
F +44 (0)1234 372039  
E [stationmanager.littlebarford@rwenpower.com](mailto:stationmanager.littlebarford@rwenpower.com)  
I [www.rwenpower.com](http://www.rwenpower.com)