



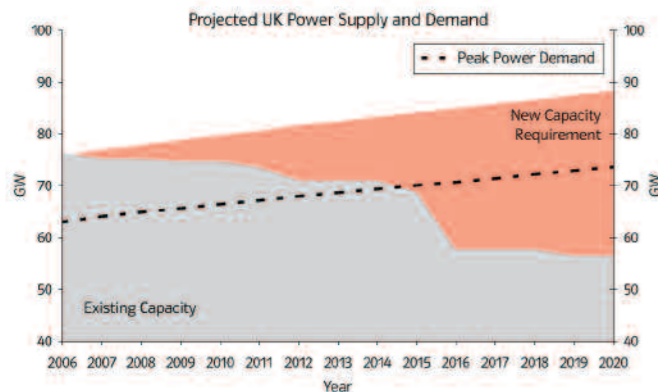
**E.ON UK**  
Westwood Way  
Westwood Business Park  
Coventry  
CV4 8LG  
T +44 (0) 24 7642 4000  
eon-uk.com

# Proposed Replacement Coal-Fired Units for Kingsnorth Power Station

Non-Technical Summary of Environmental Statement

## Background - the need for new generation capacity

Over the coming decade the UK requires sustained investment in new electricity generation capacity to replace plant which is coming to the end of its useful life.



This replacement must be done in a way that assists with tackling the dual challenges of climate change and maintaining security and diversity of energy supplies to UK homes and business. This is particularly relevant as the UK becomes increasingly reliant on imported gas supplies.

The existing units at Kingsnorth are over 30 years old. (Below)



E.ON UK believes that these challenges can be met and is actively investing in many different projects in the UK to achieve this.

- Investing in new gas fired generation capacity such as that planned for Grain Power Station
- Operating 190MW of renewable wind and 56MW of hydro generation
- Co-firing renewable biomass at two of our three coal-fired power stations.
- Investing in a 50MW dedicated biomass plant at Lockerbie with a similar scheme being considered for an area of the Kingsnorth site
- Planning to replace existing coal-fired units with new cleaner coal technology at Kingsnorth, the subject of this consent application. An artist's impression of the new units is shown on the front cover.
- Planning demonstration projects for new technologies that show promise for the future, including marine renewables and coal gasification with carbon capture and storage
- Funding research and development at a number of UK Universities into projects that show promise further into the future.

Although diverse in nature all these projects use the latest technology to deliver reliable, affordable energy with a lower environmental impact than those they replace.

## Introduction

As part of meeting the need for cleaner new generation capacity in the UK, E.ON UK plc is proposing to replace its four existing 485MW sub-critical coal-fired units with two new 800MW high efficiency supercritical coal-fired units.

The proposed new units will be located within the Kingsnorth Power Station land holding and will be referred to as Kingsnorth units 5 & 6 or "the new units" throughout this Summary.

The new units could be operational as early as 2012 subject to all planning approvals being received.

The existing units are coming to the end of their operating lives and permission for their demolition will be sought, following successful commissioning of the new units.

The increase in efficiency will deliver a 20% reduction in greenhouse gas emissions (notably carbon dioxide) compared to the existing units.

This is a Non-Technical Summary of the Environmental Impact Assessment which accompanies E.ON UK plc's application to the Secretary of State for Trade and Industry for consent under Section 36 of the Electricity Act 1989. The application is to construct and operate two new supercritical coal-fired units at Kingsnorth Power Station, Kent.

The Non-Technical Summary presents an analysis of the implications of the proposal in non-technical language. It has been produced in accordance with the requirements of the Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2000.

The Non-Technical Summary and Environmental Impact Assessment have been produced following the comments received during the consultation period from the Environmental Scoping Statement issued on the 11th October 2006. This process identified the issues to be covered in the Environmental Impact Assessment.

Both this Non-Technical Summary and the full Environmental Statement are available from the following sources:

At the offices of both Medway Council and Kent County Council, where they may be examined by members of the public during normal working hours.

Online on the E.ON UK website [www.eon-uk.com/supercritical](http://www.eon-uk.com/supercritical)

By writing to:

Adrian Smith  
Project Manager  
E.ON UK plc  
Westwood Way  
Westwood Business Park  
Coventry  
CV4 8LG

A number of public exhibitions are planned in the local area and details of these will be published in the local media and area nearer the time.

Further information is available for local residents concerning this project via the freephone information line (0800 0198315).

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## Consents procedure

Section 36 of the Electricity Act 1989 requires that a generating station of greater than 50MWe shall not be constructed, extended or operated unless consent is granted by the Secretary of State. Hence, the development of Kingsnorth units 5 & 6 falls under the Act.

An application is therefore being made to the Secretary of State for Trade and Industry for consent under Section 36 of the Electricity Act 1989 and for deemed planning permission under Section 90 of the Town and Country Planning Act 1990.

The consent procedure also requires a period of public consultation to be undertaken and details of these will be communicated in due course.

Consent will also be required for the demolition of the existing units 1-4 once units 5 & 6 are operational. This will be the subject of a separate planning application.

## Kingsnorth site history

Construction of Kingsnorth Power Station took place during the late 1960s and early 1970s, together with the construction of the Long Reach and Oakham Ness jetties. Long Reach jetty was modified during the early 1990s to accommodate improvements in the coal conveying plant.

The existing units have generated electricity for over 30 years and have been providing electricity to homes and businesses in the South East of England for all of this period.

Permission for the demolition of the existing units will be sought following successful commissioning of the new units.

## Summary of the Project

Each new advanced supercritical unit will be significantly more efficient than the existing units meaning much lower greenhouse gas emissions (including carbon dioxide) per unit of electricity generated. This 20% reduction of the carbon footprint is of the order of 1.8 million tonnes of carbon dioxide per year.

The new units will have the latest emissions control technology fitted. These include Flue Gas Desulphurisation (FGD) for reduction of sulphur dioxide and Selective Catalytic Reduction (SCR) plant for reduction of oxides of nitrogen.

The new units could start generating electricity in 2012 subject to all the necessary approvals being granted.

E.ON UK intends to design the new units to be capable of having carbon capture technology fitted at a later date. The carbon dioxide captured could be stored in a depleted gas field in the North Sea. This capture and storage technology is still in its infancy and there are a number of technical and policy issues to be resolved to make it proven and viable.

## Location and layout of the New Units

Kingsnorth Power Station is located in north Kent, on the bank of the River Medway, near the village of Hoo St Werburgh, which is approximately 11km north east of Rochester, Kent.

The site of the new units is to the north of the existing power station. The Ordnance Survey grid square reference for the existing station and the proposed new plant location is given as TQ8172.

When built, the new units will occupy approximately 14 hectares adjacent to the existing buildings.

The exact area is dependent upon the final design. Some areas will also be required during the temporary construction phase for contractors' working areas and storage.

The new units and areas required for construction can be accommodated within the existing E.ON UK land holding. Other suitable land for potential use during the construction phase has been identified, just north of the existing site boundary. All of the required land is accounted for within the proposed Section 36 Application Area. This is outlined in red within the site drawing. (See Figure 1 below)

The proposed development area for the units is shown in the blue hatched area.

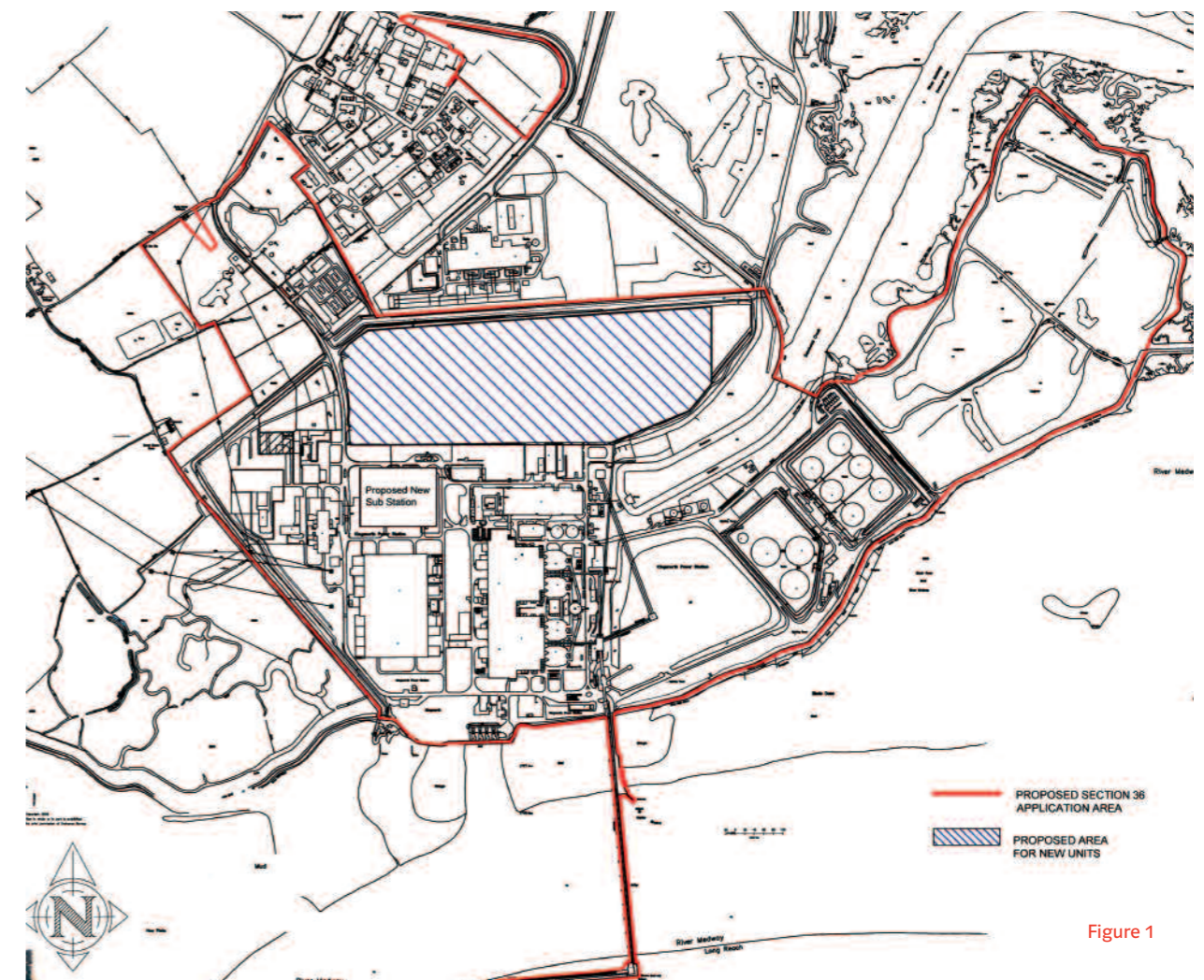


Figure 1

## The proposed new units

### 1. Coal

Coal will continue to be delivered to site by boat and unloaded via the Long Reach jetty. From the jetty it is moved by conveyor directly to the boilers or stored on the coal stockpile. The existing conveyors will be replaced and the Long Reach jetty overhauled to be suitable for the life of the new units. The stockpile can hold 1 million tonnes of coal allowing variations in electricity demand and coal supply at different times to be managed.

### 2. Boiler

The coal is ground to a very fine powder in pulverising mills, and then mixed with warm air before being burned in the boilers. These are made up of miles of tubing where the boiler feedwater is turned to steam which can be boosted to over 600 degrees Celsius and 290 bars in pressure within a supercritical boiler.

### 3. Turbine

The steam generated from the boiler expands through the turbines, striking a series of blades around the long turbine shafts. The energy transferred from the steam rotates these shafts at 3000 revolutions per minute. The steam is returned to the boiler for reheating between the high and intermediate pressure turbines to maximise the amount of energy transferred.

### 4. Generator

As the turbine shaft rotates it turns the huge magnet housed inside the copper coils of the generator stator. As the magnet rotates an electrical field is generated within the copper coils, producing the electricity.

### 5. Transformer

The power is generated at 22,000 Volts and is then boosted by the transformer to 400,000 Volts for transmission on the National Grid.

### 6. Condensers

Meanwhile, the steam, having lost most of its energy driving the turbine, enters the condenser, where it passes over small tubes containing cooling water from the River Medway. The cooling water condenses the steam back to water so that it can begin its journey back round the boiler. The cooling water is then pumped back into the River Medway.

### 7. Selective Catalytic Reduction

The exhaust gases of the new units will enter the SCR. Ammonia is injected into the exhaust gases and the mixture reacted over a catalyst similar to a catalytic converter in a car. This process reduces the concentration of oxides of nitrogen ( $\text{NO}_x$ ), by over 70%. The new units at Kingsnorth would be the first to use SCR in the UK.

### 8. Electrostatic Precipitators

The exhaust gases will then enter the precipitators which will remove approximately 99.8% of the dust. An electrical field is transferred to the dust particles in the gases which are then collected on an oppositely charged plate. The dust collected will be temporarily stored on site in covered silos and then transported by road for use in the construction industry or disposal in landfill.

### 9. Flue Gas Desulphurisation (FGD)

Finally the exhaust gas is passed to the FGD where over 90% of the sulphur dioxide emissions are removed. As the exhaust gases pass through a fine spray of limestone slurry, the sulphur dioxide in the gas reacts to produce calcium sulphite. This is converted to calcium sulphate (gypsum) which can then be used in many commercial applications, for example plasterboard manufacture. The exhaust gas is then passed to the chimney. It is anticipated that both the limestone and gypsum will both be transported using river barge into the Long Reach jetty. This will require some works on the jetty deck.

### 10. Open Cycle Gas Turbines

Two new 50MW oil-fired gas turbines will be installed to replace those attached to the existing units. These will allow the new units to start-up independently of the National Grid at times of supply failure or can be run at times of very high demand.

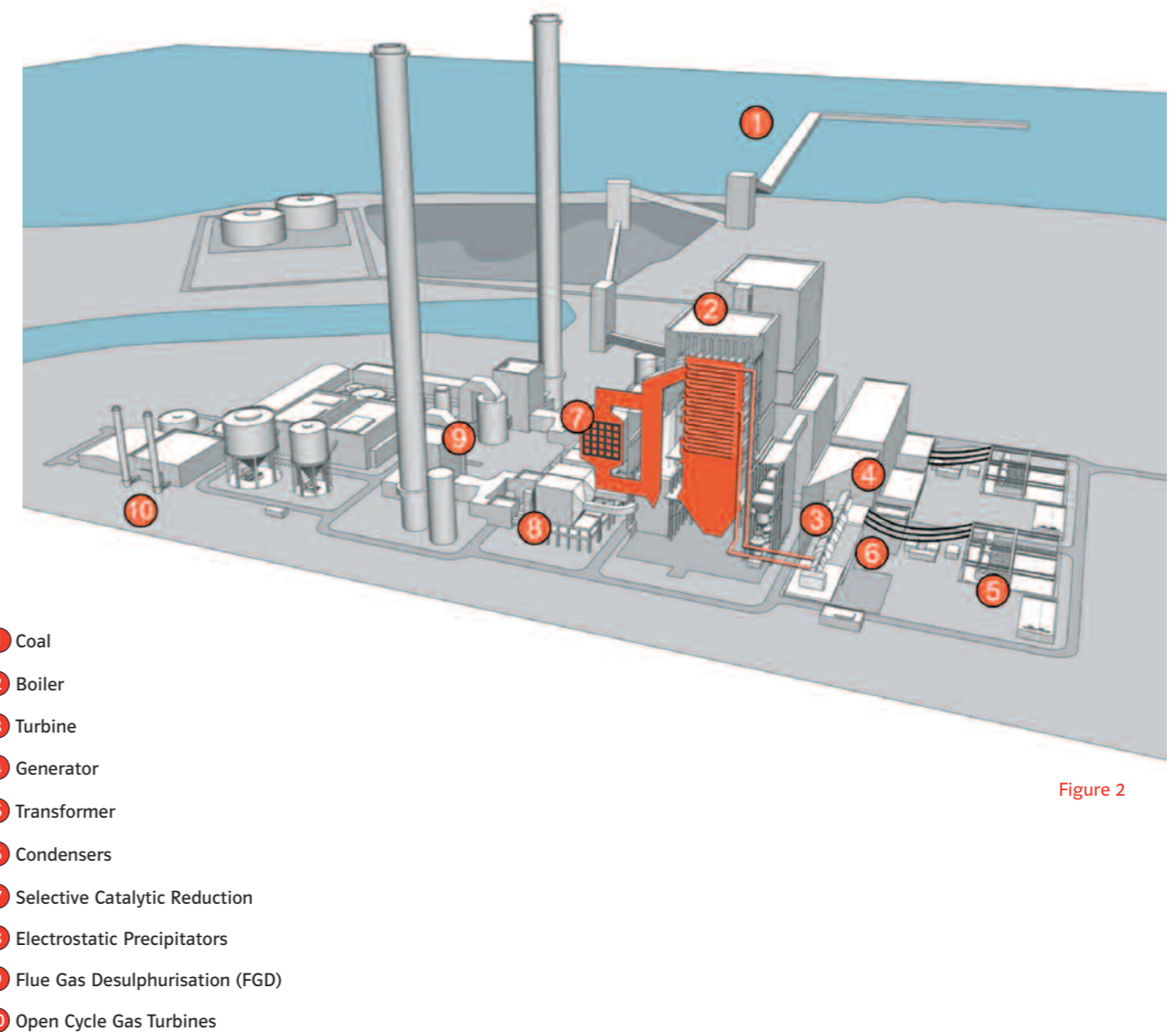


Figure 2

## How Supercritical Delivers Higher Efficiency

In a power station, the objective is to convert energy present in raw fuel into useful electrical energy for use in homes and businesses. In achieving this objective there are a number of fundamental issues to consider.

These include:-

- Maximising efficiency
- Minimising emissions

The efficiency of the plant can be described in simple terms as 'the ratio of electrical energy out to the fuel energy in'. In general, the more efficient a power plant is, the lower the amount of fuel burnt and the emissions being produced to the atmosphere.

All of the existing coal-fired power stations in the UK, including the existing units at Kingsnorth, are of sub critical design and achieve efficiencies of 35-38% depending upon their age and specific design.

The higher operating temperatures and pressures within supercritical boilers mean that the gaseous and liquid phases of the water/steam in the boiler combine into one "supercritical" fluid. As a consequence of this, supercritical boilers avoid wasting energy separating liquid and gaseous phases of water before the steam is passed through the turbines. This means supercritical plant can offer greater efficiencies in comparison to sub-critical plant.

The proposed new units offer higher efficiencies and significantly lower emissions per unit of electricity by around 20% (approximately 1.8 million tonnes a year) compared to the units they replace. A typical high efficiency supercritical coal-fired plant can offer efficiencies of 45 % or higher, especially if sea water cooling is employed, as proposed at Kingsnorth. Most existing sub-critical coal-fired plants built in the UK during 1960s-70s, such as the existing Kingsnorth units have operating efficiencies which are unlikely to exceed 37 %, especially in plant which has seen extensive operation.

## Potential for biomass co-firing

Biomass is burnt with coal on the existing units, reducing the emissions per unit of electricity. Subject to the outcome of the review of the Renewables Obligation currently underway by the Government and providing suitable biomass is available; the new plant will be designed to burn a proportion of biomass with the coal similar to that already achieved on the existing units.

## Water Supply

Water supply is becoming a real issue in the South east of England. E.ON UK proposes to build a desalination plant to provide the power station with water for operational processes.

## Construction

E.ON UK has a vast experience of large generating plant and retrofit projects, and has successfully undertaken the role of Owner's Engineer for many construction projects, both in the UK, and overseas.

A dedicated project management team of experienced E.ON UK employees will oversee the construction of the new units to ensure that all works are being carried out in a safe, efficient and proper manner.

Subject to the granting of all relevant consents and licences for the construction of Kingsnorth units 5 & 6, the earliest date for construction works to commence on site would be 2008. On this timescale, the first unit of Kingsnorth units 5 & 6 could commence operation by 2012. The other unit is expected to be available by 2013.

Outline programme	
Consultation period:	Winter 2006 - Spring 2007
Consent for construction :	Expected Winter 2007
Site preparation and construction:	2008 - 2012
First unit fully operational:	2012
Second unit fully operational:	2013

## Air Quality Impacts

An assessment of the effect on local air quality of the proposed station has been undertaken. The assessment has been carried out using a well established computer model.

The changes in air quality predicted to result from the new units have been assessed against relevant air quality objectives set out in the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland, and to a guideline value set by the World Health Organisation (WHO).

This has been compared to the existing situation for Kingsnorth with the combined impact of the existing units and existing background concentrations having also been compared with the Air Quality Strategy objectives and World Health Organisation guidelines. Worst case meteorology and emissions have been assumed in both studies.

The results show that the new units will emit significantly less emissions to the environment compared to the existing units. This is due to the higher efficiency and the use of the latest available emissions control technologies on the new units.

There will be significant reductions in sulphur dioxide through the use of Flue Gas Desulphurisation. Other emissions such as nitrogen dioxide and nitric oxide; carbon dioxide, water vapour and particulates will also be reduced.

### Sulphur dioxide:

Monitoring sites in the vicinity of Kingsnorth show that for the existing units the measured concentrations of sulphur dioxide (SO<sub>2</sub>) are well within health-based Air Quality Strategy objectives and World Health Organisation guidelines.

Predicted SO<sub>2</sub> concentrations from the new units will also comply well within the Air Quality Strategy objectives and World Health Organisation guidelines. Whether adjustments for existing background concentrations are taken in to the calculations or not the units will still comply.

#### Nitrogen oxides:

The proposed new units will emit nitrogen oxides (NO<sub>x</sub>), including nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). Within this group of gases NO<sub>2</sub> is monitored at a local and national level. Nitrogen dioxide has health-related air quality objectives.

Most oxides of nitrogen (NO<sub>x</sub>), will be in the form of nitrogen oxide (NO) and only 5% of the emissions consists of nitrogen dioxide (NO<sub>2</sub>). The computer model has been used to estimate the proportion converted and the resulting ground level concentrations of NO<sub>2</sub>.

For the existing units, the monitoring sites show that the existing annual average concentrations of nitrogen dioxide near to the Kingsnorth site are well within the objectives for the protection of human health. Measured values sit comfortably within (about 60 percent) of the required Air Quality Strategy values.

For the new units, the predicted maximum ground level nitrogen dioxide concentrations are likely to be improved and are projected to sit well within Air Quality Strategy objectives. This is primarily due to the installation of Selective Catalytic Reduction (SCR).

The predicted concentrations of nitrogen dioxide meet both Air Quality Strategy objectives for the protection of human health comfortably

#### Particulates (Dust):

The predicted maximum ground level concentrations of fine particulates or dust for the new units are extremely low. They are predicted at less than 1% of the Air Quality Strategy values for particulates. This is due to the design of the boiler, and the installation of electrostatic precipitators and FGD.

Taking into account local background concentrations, the predicted particulate ground level concentrations including the new units' contribution are comfortably within the relevant objectives.

#### Impacts on Vegetation:

UK Air Quality Strategy objectives exist for sulphur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) for the protection of vegetation and ecosystems. These objectives do not apply at various locations including within 5km of an industrial source such as the proposed new units.

At distances greater than 5km from the new units, (where the objectives apply) maximum predicted NO<sub>x</sub> concentrations resulting from the proposed new units are typically 30 times less (1µg/m<sup>3</sup>) compared to the objective of 30µg/m<sup>3</sup>. Corresponding concentrations of sulphur dioxide are also typically 20 times less (1 µg/m<sup>3</sup>) than the objective of 20 µg/m<sup>3</sup>.

#### Dust during Construction:

During the construction of the proposed new units there is potential for dust to be generated from various activities. This includes demolition and construction of buildings, transportation of materials to and from the site by construction traffic and earthworks. Mitigating measures will be adopted such as sheeting of goods vehicles carrying loose materials, use of water sprays during hot periods to dampen down working areas and roadways, frequent washing of roads and surfaces, and wheel washing of vehicles leaving the site.

#### Global Warming Potential:

The proposed new units will emit significantly less carbon dioxide (a greenhouse gas) per Megawatt hour of electricity produced than the existing Kingsnorth units 1 -4.

#### Photochemical Ozone Creation Potential:

The proposed new units at Kingsnorth are likely to lead to a reduction in local ground level ozone concentrations which will improve existing local air quality and values for health related objectives.

## Water Quality

Assessments have been made of the water discharge from the new units against the applicable regulations.

#### Cooling water discharge

The most significant water impact from the operation of the proposed new units will arise from the cooling water system. Units 5 & 6 will use a direct cooled system similar to that used on the existing units.

Direct cooling means that river water is used in the condenser to cool steam after it leaves the turbines prior to its journey back to the boiler. When the cooling water leaves the condenser the water passes back into the river at a slightly higher temperature.

The use of direct cooling offers a number of advantages over alternative methods:

- It is the most efficient method of cooling; meaning less emissions are produced per unit of electricity
- It has a lower visual impact than cooling towers (the next most efficient method) and there is no vapour plume

Direct cooling is proposed for the new units. It is proposed that the existing intake and outfall structures will be used. This will minimise any offshore civil works and construction impacts.

The water for cooling will be abstracted via the shoreline intake and the same volume, at a warmer temperature, will be discharged via the outfall structure in Damhead Creek. The discharged water flows along Damhead Creek, which becomes East Hoo Creek. East Hoo Creek flows into the main channel of the Medway Estuary, where it mixes with ambient estuary water.

The discharge of cooling water in this manner can have impacts on species in the vicinity of the discharge. These impacts have been assessed in detail as part of the Environmental Impact Assessment and are summarised here. The impact results from the water re-entering the river warmer than when it left. This is referred to as the thermal discharge from the new units.

The reduced size and increased efficiency of the new units compared to the existing units will give rise to a lower thermal discharge compared to that of the existing units. The exact details will depend on the detailed plant design and so worst case assumptions have been made to assess this impact.

Aquatic invertebrates (e.g. lugworms) living close to the cooling water outfall will experience an effect resulting from the thermal discharge. Evidence from operation of the existing units has shown that the number of species of invertebrates is reduced near to the discharge, but the abundance of the species that remain is higher. The main importance of these invertebrates in this area is as a food resource for fish and bird species. It is concluded that there will be no significant change to food resources available to birds and fish resulting from the operation of the new units compared with existing operations.

Sea bass and bass fry favour elevated water temperatures, particularly adjacent to the power station outfalls. A "no fishing" box has been created in these areas that are designated under "The Bass (Specified Areas) (Prohibition of Fishing) Order 1990" to protect the juvenile stocks from exploitation. Continued operation of a power station at Kingsnorth would therefore be favourable for this species. Several sea bass nursery areas in the UK are designated to be in power station cooling water discharges.

There are no statutory temperature standards for estuaries such as the Medway, although the Environment Agency has recently produced guidance on assessing thermal discharges in relation to designated sites. This is relevant to Kingsnorth as the nearby salt marshes and mudflats are designated as a Special Protection Area under the Wild Birds Directive.

Sophisticated computer modelling of the new units has been undertaken against this guidance. The modelling shows that the impact of the thermal discharge of the new units will not extend across the width of the Medway Estuary at any stage of the tide. There will, therefore, always be unaffected pathways that fish can use to enter and exit the Medway Estuary, should they choose to avoid the CW discharge.

Overall, the CW discharge from the proposed new units, operating both alone and in combination with Medway Power and the proposed Grain CCGT, is not expected to have a significant beneficial or detrimental effect on the water quality of the estuary or the integrity of Medway Estuary and Marshes Special Protection Area.

### Treated Waste Water Discharge

There will be an aqueous discharge from the FGD plant, which is passed through a waste water treatment plant before joining the CW flow, prior to discharge into Damhead Creek. Although the waste water treatment plant removes most metals from the discharge, it will still contain trace elements and chloride. The chloride concentration in the CW discharge will be very small compared with the natural chloride concentration in the estuary water. Therefore the chloride in the FGD waste water treatment plant discharge has no impact on the estuary.

In addition to an increase in temperature of the aqueous discharge above the ambient temperature, chloride and trace elements, there may be residual chlorine present at the discharge point. This may occur when chlorination is performed periodically to act as a biocide in the CW system. Any dosing regime will be based on past operating experience and will be such that no significant release of residual biocide will occur at the CW outfall.

An assessment of the discharge from the FGD waste water treatment plant shows that under design conditions, all trace element discharges can be considered as insignificant. All process contributions at the outfall (the concentration in the CW discharge caused by the FGD waste water treatment plant) are below 1% of the relevant Environmental Quality Standards and Environmental Assessment Levels

(the benchmark concentrations above which impacts may be unacceptable). Under worst case conditions that cannot be sustained in practice, discharges of all trace elements other than silver are expected to be insignificant. For silver the process contribution is 1.6% of the Environmental Assessment Level of 0.5 µg/l at the outfall, but will fall below 1% of the Environmental Assessment Level close to the outfall channel, such that the impact on the estuary is insignificant.

## Ecology

There are a number of sites of conservation interest in the vicinity of the Kingsnorth Power Station. The most important and extensive site in the immediate vicinity is the Medway Estuary and Marshes Special Protection Area (SPA), a Natural 2000 site that is of international importance for qualifying populations of breeding and non-breeding waterbirds. The SPA is also notified as a Site of Special Scientific Interest (SSSI), of national importance for its saltmarsh and grazing marsh vegetation, which includes an "outstanding assemblage" of nationally rare and scarce plant species.

The main part of the development will be located in close proximity to the existing units of Kingsnorth Power Station and will largely be screened from the estuary by existing buildings. Some heavy loads will be brought into the existing roll on-roll off (Ro-Ro) jetty on the Long Reach jetty, in line with transport policies for the area that favours the use of shipping rather than road transport. From an assessment of bird disturbance studies, there is no reason to conclude that the development will have a significant long-term impact on the bird populations using the Medway Estuary and Marshes Special Protection Area. On the other hand, there is likely to be short-term disturbance to roosting and feeding areas during construction. There will be a specific mitigation plan for the development of the conveyors through the sensitive statutory designated habitats.

The parts of the development site where the new units and associated construction laydown areas are proposed consist of impoverished habitats. These areas have

been heavily modified during the industrial use of the site. The vegetation mainly consists of agricultural and amenity grassland, with a small number of planted trees and shrubs. Common and tall weeds are abundant on disturbed ground. There are also smaller areas of hardstanding, buildings and low level structures. There will be little loss of important habitat or plant species associated with the new units and associated construction laydown areas. There is one nationally scarce plant, namely, divided sedge. This exists within the footprint of the new units and temporary construction areas. One other notable species, formerly classified as nationally scarce, is the brackish water-crowfoot. This species can be located in the northern boundary ditch. Both species will be subject to mitigation plans.

There are no territories of specially protected bird species within the proposed development area for the new units. There are small breeding populations of species of conservation concern, through inclusion on the UK's list of Biodiversity Action Plan priority species or the red and amber lists of the Royal Society for the Protection of Birds (RSPB) and others. These are common, but declining species. Those present in the proposed development area for the new units are turtle dove, linnet, reed bunting, bullfinch, meadow pipit, dunnock and nightingale. The habitat requirements for these species will be incorporated in the mitigation plan.

Specially protected bird species in the vicinity of the development are black redstart, which did not breed in 2006, and the peregrine falcon. Both species breed within the existing power station structures. Neither of these species has been known to use the proposed development area for finding prey and therefore no impact is predicted. The legal requirement to avoid reckless disturbance to these species will form a part of any construction contracts.

Ongoing reptile surveys have identified populations of slow worm and common lizard, principally in the construction laydown areas around the development site. The legal requirement to avoid intentional killing of these species will

require a mitigation plan that will include reasonable measures to exclude these species from the development area.

Great crested newt, a European protected species, has what is reported to be a declining population within the site. No eggs were found in this location. However, a small number of adult newts were found in two recently dug small ponds. They were found within the proposed development site and the ditch to the north. Larger numbers may be present in terrestrial habitat, which is afforded the same legal protection as the breeding sites. Appropriate mitigation for this species will be implemented, and it is likely that this will involve mitigation based on the temporary removal and exclusion of this species from the site under licence, followed by provision of new habitats designed to encourage the long-term survival of this colony.

The potential impacts at important sites for nature conservation due to air emissions have also been considered under the air quality assessment. The use of Flue Gas Desulphurisation and Selective Catalytic Reduction, to control sulphur dioxide, nitrogen oxide and other emissions, means that there will be no significant off-site impacts arising from air emissions from the new units.

## Flood Risk

The Kingsnorth site is protected by an existing flood defence system, the most recent strengthening of the system being undertaken in 1987. The Environment Agency recommended that a survey be undertaken to establish the height of the existing defences which would offer protection to the site.

E.ON UK proposes to reinforce flood defences, as appropriate.

## Landscape and Visual Effects

The development is located at the interface of the Greater Thames Estuary and North Kent Plain character area, which are flat, open and low-lying, containing sparse tree cover with widely dispersed settlements. Industrial buildings and complexes dominate views and have become characteristic of the area.



**Figure 3a**  
Existing distance view from Sharp's Green Riverside Country Park and Saxon Shore Way, Rainham.



**Figure 3b**  
Proposed distance view from Sharp's Green Riverside Country Park and Saxon Shore Way, Rainham, upon completion of units 5 & 6.



**Figure 3c**  
Proposed distance view of units 5 & 6 from Sharp's Green Riverside Country Park and Saxon Shore Way, Rainham, after demolition of the existing units.

### Effects on the landscape

The proposed new units will be located on meadow and rough grassland to the north of the existing station units with no loss of important landscape features. The development is in keeping with the local landscape character of industrial buildings and complexes. The overall effects on the landscape have therefore been assessed as insignificant due to the nature and location of the development. The majority of features lost through the construction process will be re-established as species rich grassland and scrub.

**Figure 4a**  
Existing distance view from the eastern edge of Hoo village, looking towards Kingsnorth Power Station.



**Figure 4b**  
Proposed distance view from the eastern edge of Hoo village, looking towards Kingsnorth Power Station, upon completion of units 5 & 6.



**Figure 4c**  
Proposed distance view from the eastern edge of Hoo village, looking towards Kingsnorth Power Station, after demolition of the existing units.



**Figure 5a**  
Existing view from Tunbridge Hill, looking towards Kingsnorth Power Station.



**Figure 5b**  
Proposed view from Tunbridge Hill, looking towards Kingsnorth Power Station, upon completion of units 5 & 6.



**Figure 5c**  
Proposed view from Tunbridge Hill, looking towards Kingsnorth Power Station, after demolition of the existing units.



## Effects on people's views

During construction and when the development is completed, the greatest visual effects are from the west, north and north-east. The adverse effects are reduced when the existing units have been demolished.

During the demolition of units 1-4, people located in the south and nearest to these units, will experience the greatest effect on visual amenity. Three groups of people will experience an adverse effect in the short term but this will reduce in the long term.

When the existing units have been demolished, two groups of residents viewing the site from the north will experience impacts of the greatest magnitude and significance. Their views are from higher ground at relatively close proximity and the structures associated with units 5 & 6 will be located closer than the existing units. These people will experience an effect on visual amenity in the long term.

The wider landscape of the development site is predominantly open and low-lying, with the effect of the proposal being widely visible. However the development, in the short term, is viewed against the existing power station units 1-4. This increases the visibility of the station resulting in a denser or more extensive mass of buildings with three chimneys instead of one. The proposed new units will amplify the visual aspect of the station and the effect on the surrounding visual amenity. However, the increased effects on visual amenity in the short term are replaced by a minimal increase in effects on visual amenity in the long term. We will consult widely on a boiler house design that minimises visual impact in the surrounding landscape. The decommissioning and demolition of the units 1-4 will result in a single power station dominating views in the long term.

## Transport

The transport impact associated with the development falls into two distinct phases: construction and operation.

Construction is programmed to last for 48 months. The number of construction workers is expected to rise up to 3300 at the peak of construction for a short period.

The wider study area for the transport assessment has been identified in discussions with Medway Council to cover the route from the M2 Junction 1 to Kingsnorth Power Station comprising A289 Wainscott Bypass, Four Elms Roundabout, A228 and Ropers Lane.

The transport assessment has established the baseline conditions within the study area. It has also considered in detail the traffic generation of the new units and has calculated how, when and where this traffic arrives at and departs from the study area.

From the detailed investigation, a number of potentially sensitive areas and issues have been identified:

Location	Justification
Junction of Stoke Road/ Ropers Lane	The potential interaction between development and traffic from/to Hoo St. Werburgh village via Stoke Road.
Sturdee Sports and Social Club	The potential interaction between development and Social Club traffic.
Ropers Lane approach to Junction with Stoke Road	HGV directional sign needs re-erecting and improving
Ropers Lane	Poor road condition in places.
Nature Study Centre/ adjacent to the power station entrance	The potential interaction between development and Nature Study Centre traffic.
Saxon Shore Way Long Distance Footpath crossing of Ropers Lane	Potential interaction of walkers/ pedestrians with development traffic at point of crossing
Stoke Road - A228 designated cycle route.	Potential interaction between cyclists using designated route and development traffic.

The assessment has established that, provided the following mitigation measures are implemented, the development proposal can be accommodated within the identified study area. The recommended mitigation measures are as follows:

- Implementation of a Transport Plan to minimise the traffic on local roadways. For example, about 50% of the workers will find accommodation in the locality and are likely to be dispersed, bringing more income to the local businesses.
- Use of sea transport for coal, limestone and gypsum.
- Designated advisory route for construction workers and HGV's.
- Highway measures to improve highway safety including signage, workforce briefings, etc.

The use of sea transport for imports of limestone and coal, and exports of gypsum can be undertaken using the existing Long Reach jetty. It is likely that additional covered conveyor belts may need to be constructed for this purpose. The new units will use less fuel in comparison with the existing units and so reduced shipping of coal will occur. Overall, shipping movements will remain very similar to those experienced at present.

Once construction is complete and the new units are fully operational; traffic to and from the development will be minimal in comparison to construction and there will be no residual impacts.

## Noise

The procedure for determining a recommended noise level for new industrial premises are generally guided by the principles set out in British Standard BS4142. This standard recommends that industrial noise should be assessed by comparing the new plant noise with the pre-existing background noise level. In circumstances where the plant operates 24 hours per day the night-time background noise level is used. BS 4142 states that the probability of noise complaints ensuing is 'marginal', if the new plant noise does not exceed the pre-existing background noise level by more than 5dBA.

The environmental noise climate around the Kingsnorth site is currently subject to 24 hour contributions from the existing four units, Damhead Creek Power Station and noise from local traffic during day/evening periods.

When units 5 & 6 are commissioned there will be a staged closure of the existing units, hence from an environmental noise impact perspective the key consideration is how the noise level contribution from the new units compares to that from the existing units. Although the new units will have additional plant items (i.e. FGD), an Environmental Noise Criterion for the new units has been proposed which will ensure that the operational noise levels from the new units will actually be less than noise levels from the existing units by between 3 and 5 dB at the key residential locations. This will be made certain via contractual guarantees placed on the plant supplier.

## Socio-Economic Effects

To support the needs of sustainable development, E.ON UK will seek to employ as many local businesses and people as possible. The new units' construction and ongoing operation will benefit the local economy. Where specific skills have to be sourced from a wider geographical area, it is proposed that construction workers will reside in local accommodation within the Medway area. This will assist in distributing the economic benefit of the development amongst the surrounding communities.

The construction of the proposed Kingsnorth units 5 & 6 will also ensure a continuing employment presence at Kingsnorth Power Station. This will help secure longer-term prospects for permanent staff already living in the locality and, in addition, provide direct employment for the local economy in terms of the need to provide services and materials.

## Cultural Heritage

Archaeology South East has carried out an archaeological and geoarchaeological desk study.

It has been concluded that the proposed development areas may have some known archaeological potential, although no significant archaeological sites were located.

During construction, care will be taken to identify any archaeological remains discovered so that investigations can be taken in parallel with the development and construction the new units.

## Health and Safety

E.ON UK is committed to ensuring the health and safety of all its employees, and other people who may be affected by its activities. We will comply with all legislation, including the following Acts:

- The Health and Safety at Work Act 1974 and associated regulations
- The Factories Act 1961
- The Electricity at Work Regulations 1989
- The Electricity Supply Regulations 1988
- The Workplace (Health, Safety and Welfare) Regulations 1992
- The Construction (Design and Management) Regulations 1994 as amended by the Construction (Design and Management) (Amendment) Regulations 2000

Under the Construction (Design and Management) (CDM) Regulations, management plans will be developed for all contractual phases for the new units including the design, construction and commissioning of the plant. A Planning Co-ordinator will be appointed, and one of the major contractors will undertake the Principal Contractor's role.

The contractors will be required to design the new units to incorporate health and safety features to ensure that E.ON UK's commitments are met. Procedures produced by the contractors will interface with Kingsnorth Power Station's site systems and safety rules. The Health and Safety Executive (HSE) will be kept informed of developments and consulted as appropriate.

Other legislation that we will comply with includes, but is not limited to the following:

- The Control of Industrial Major Accident Hazards (CIMAH) Regulations
- The Control of Substances Hazardous to Health (COSHH) Regulations
- Fire Precautions Act 1971

## Environmental Management

E.ON UK implements Environmental Management Systems at all its sites, and these will be extended to include the Kingsnorth units 5 & 6 both during construction and operation. A formal Environmental Management Plan will be produced as part of the project to ensure that contractors adhere to high environmental standards and the work meets formal planning conditions and license requirements.