

PROPOSED MEAFORD ENERGY CENTRE

SUSTAINABILITY TECHNICAL NOTE

INTRODUCTION

1. Meaford Energy Limited (MEL) is promoting the development of the Meaford Energy Centre and Connections (MEC) which is a new combined cycle gas turbine (CCGT) power station at Meaford Business Park, Staffordshire. The CCGT power station will have an electrical capacity of up to 299 megawatts (MW). The development will comprise the CCGT power station and the integral gas pipeline between the MEC and the existing gas network.
2. The proposal constitutes a Nationally Significant Infrastructure Project (NSIP) under the terms of the Planning Act 2008, as its capacity is greater than 50MW, and therefore, an application for a development consent order (DCO) is to be made to the Planning Inspectorate (PINS), who will examine the DCO application on behalf of the Secretary of State.
3. As a part of its application to the Planning Inspectorate for a Development Consent Order for a proposed CCGT power station, Meaford Power Limited (MEL) will submit a sustainability appraisal of the proposals.
4. This paper describes the approach that MEL proposes to take to ensure that the proposed CCGT power station represents a sustainable form of development. It begins with a summary of the general policy requirements, and proceeds to explain how the sustainability of the project will be addressed.

GENERAL SUSTAINABILITY REQUIREMENTS

National policy statements on energy

5. The goal of sustainable development is to 'enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations'¹.

¹ From *One future - different paths: The UK's shared framework for sustainable development*, HM Government, Scottish Executive, Welsh Assembly Government, Northern Ireland office, 2005.

6. Sustainability lies at the heart of national policy frameworks for both energy and planning, as confirmed by the following statements on the Department of Energy and Climate Change's Overarching National Policy Statement for Energy (EN-1)²:

Para. 1.7.1 All the energy NPSs have been subject to an Appraisal of Sustainability (AoS), as required by the Planning Act 2008.

Para. 2.2.19. . . The Government believes that the NPSs set out planning policies which both respect the principles of sustainable development and are capable of facilitating, for the foreseeable future, the consenting of energy infrastructure on the scale and of the kinds necessary to help us maintain safe, secure, affordable and increasingly low carbon supplies of energy.

Para. 2.2.27 . . . Sustainable development is relevant not just in terms of addressing climate change, but because the way energy infrastructure is deployed affects the well-being of society and the economy. For example, the availability of appropriate infrastructure supports the efficient working of the market so as to ensure competitive prices for consumers . . .

Para. 2.2.28 The planning framework set out in this NPS and the suite of energy NPSs takes full account of the objective of contributing to the achievement of sustainable development and this has been tested through the AoS. The AoS has examined whether the NPS framework for the development of new energy infrastructure projects is consistent with the objectives for sustainable development, including consideration of other Government policies such as those for the environment, economic development, health and transport.

National planning policy

7. The influence of sustainability on planning decisions is explained in the National Planning Policy Framework (NPPF), published by the Department for Communities and Local Government in March 2012. Whereas the National Policy Statements such as EN-1 form the primary expression of government policy for projects such as the Meaford Energy Centre, the NPPF may also be of relevance³.
8. According to the ministerial foreword at the beginning of the NPPF, 'Sustainable means ensuring that better lives for ourselves don't mean worse lives for future generations'. The foreword continues ' . . . sustainable development is about positive growth – making economic, environmental and social progress for this and future generations'.

² Presented to the UK Parliament in July 2011 pursuant to section 5(9) of the Planning Act 2008.

³ NPPF paragraph 3

9. Paras 11-16 of the NPPF explain that there should be a presumption in favour of sustainable development, and para. 17 sets out the 'core planning principles' that underpin this. These include proactively driving and supporting sustainable economic development, seeking to secure high quality design, protecting greenbelts and the intrinsic character and beauty of the countryside, and encouraging *'the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value'*.
10. Under the heading Delivering Sustainable Development, paras. 18-22 of the NPPF then proceeds to explain how planning can help to build a strong, competitive economy, through measures including the identification of 'priority areas for economic regeneration, infrastructure provision and environmental enhancement'. Para. 80 identifies the partial or completed redevelopment of brownfield land as a potential exception to the normal restriction of development in green belts, subject to conditions. Para. 111 highlights the benefit of focussing development on brownfield sites as a means of conserving and enhancing the natural environment.

Proposed response

11. In response, MEL proposes to adopt a broadly-based approach to ensuring that its project can meet applicable sustainability criteria. This is summarised below under the following headings:
 - energy sustainability
 - site selection
 - building design
 - gas and electricity grid connections
 - transport
 - construction management.

ENERGY SUSTAINABILITY

12. Natural gas is a fossil fuel and a finite resource. MEL will explain how the use of natural gas for electricity generation represents an appropriate use of this resource, both as a part of the UK's energy mix and in terms of the government's strategy to reduce greenhouse gas emissions from the energy sector.
13. One of gas's advantages is that it can be used at very high rates of efficiency in a combined-cycle gas turbine (CCGT) power station of the type that MEL proposes. Whereas a coal-fired power station would operate typically at 30-35% efficiency, up to 60% efficiency is attainable in a CCGT gas-fired power station.

14. Another advantage of CCGTs is their ability to operate flexibly in response to supply and demand. They can be turned off, or run efficiently at part load, when demand is low or if there is a high level of generation from renewable sources including wind. This flexibility reduces the amount of CO2 produced across all generation in the UK, but also ensures that the country has sufficient controllable generation to meet the daily needs of households and businesses.
15. The role of fossil fuel generation in the UK is explained in paras. 3.6.1 to 3.6.3 of National Policy Statement EN-1, as follows.

3.6.1 Fossil fuel power stations play a vital role in providing reliable electricity supplies: they can be operated flexibly in response to changes in supply and demand, and provide diversity in our energy mix. They will continue to play an important role in our energy mix as the UK makes the transition to a low carbon economy, and Government policy is that they must be constructed, and operate, in line with increasingly demanding climate change goals.

3.6.2 Fossil fuel generating stations contribute to security of energy supply by using fuel from a variety of suppliers and operating flexibly. Gas will continue to play an important role in the electricity sector – providing vital flexibility to support an increasing amount of low-carbon generation and to maintain security of supply. The UK gas market has diversified its sources of supply of gas in recent years, so that as the UK becomes more import dependent, companies supplying the market are not reliant on one source of supply. This protects the UK market from disruptions to supply. UK natural gas supplies come from the producing fields on the UK Continental Shelf, by pipeline direct from Norway, and from continental Europe through links to Belgium and the Netherlands. Liquefied natural gas (LNG) is imported by tanker, supported by ongoing investment in LNG facilities such as those on the Isle of Grain and at Milford Haven. ... This ability to source fuel from alternative suppliers helps to give stability to the UK's generating capacity. In addition, unlike some renewable energy sources such as wind power, fossil fuels may be stockpiled in anticipation of future energy demands.

3.6.3 Some of the new conventional generating capacity needed is likely to come from new fossil fuel generating capacity in order to maintain security of supply, and to provide flexible back-up for intermittent renewable energy from wind. The use of fossil fuels to generate electricity produces atmospheric emissions of carbon dioxide. The amount of carbon dioxide produced depends, amongst other things, on the type of fuel and the design and age of the power station. At present coal typically produces about twice as much carbon dioxide as gas, per unit of electricity generated. However, as explained further below, new technology offers the prospect of reducing the carbon dioxide emissions of both fuels to a level where, whilst retaining many of their existing advantages, they also can be regarded as low carbon energy sources.

16. In summary, national planning policy for energy identifies a clear role for gas generation as a part of the overall transition to a low carbon economy. Gas generation helps to address the intermittency of leading sources of renewable energy including wind and solar developments.

17. A by-product of gas generation is heat. MEL will investigate the means of supplying surplus heat to incoming industrial and commercial occupiers on the Meaford Business Park, thus enhancing the sustainability of the current project and the business park development as a whole.

THE SITE

18. MEL will provide an explanation of why the preferred location on Meaford Business Park is considered to be a sustainable site for a CCGT gas-fired power station, in comparison with the alternatives. This analysis will embrace the following considerations.
 - Proximity to gas and electricity grid connections - Meaford is in one of comparatively few areas of England and Wales which has gas and electricity networks with the capacity to supply gas and accept the electricity generated from a new CCGT power station in close proximity.
 - Potential for gas and electricity grid connections and water supply – a particular attraction of Meaford Business Park is the presence of an existing, recently-refurbished electricity sub-station adjacent to the site, through which a connection could be made to the electricity distribution network. The substation has undeveloped land which could accommodate any new connection infrastructure. Undeveloped corridors of land have been identified between the potential CCGT power station site and feasible connection points on the off-site gas network, through which the required connections could pass. Route options will be the subject of detailed landscape, archaeology, ecology and residential amenity assessment. Water supply is available from the water mains supplying the industrial estate.
 - Site characteristics – the site was formerly occupied by two coal-fired power stations, which were demolished during the 1990s. It currently comprises extensive areas of concrete surfacing, rubble heaps and filled voids, crossed overhead by power lines running from the electricity sub-station described above. The overall site is many times larger than the area of land required for a CCGT power station, enabling a power station development to take place alongside and in conjunction with other business uses. Higher terrain on the north, east and southern sides of the site, coupled with mature woodland boundary vegetation, would assist the visual containment of new development.
 - Environmental designations – as explained in the environmental technote that accompanies this note, there are no listed buildings or scheduled ancient monuments on the site, and the site is not designated as a conservation area or historic park or garden. The site is not subject to nature conservation designations.

- Biodiversity - ecological assessment undertaken in conjunction with approved business park development proposals for the site, and verified by MEL's own site assessment, indicates that most of site's ecological interest is found in woodlands and water features on the periphery of the site. The opportunity exists to incorporate these existing features into the landscape and habitat creation strategy for the business park
 - The local landscape - a CCGT power station in this location would be sited amongst other industrial and commercial developments, for which planning permission has already been granted. As noted above, the existing terrain and vegetation will help to contain views of the CCGT power station from areas outside the business park site.
 - Economic considerations – Meaford Business Park is one of the largest employment allocations in Staffordshire, providing opportunities for MEL to supply heat to large heat users on the estate. This would further boost the energy efficiency of the project whilst enhancing the attractiveness of the Business Park for incoming employers. A CCGT power station development would also enable the construction of road access into the business park site and associated landscape works.
 - Health and social considerations – the CCGT power station proposals and associated grid connections will be accompanied by a health impact assessment. The location of the development will help to ensure no adverse effects in these terms. With respect to the protection of residential amenity, it is helpful that the sites being investigated are relatively remote from residential neighbourhoods.
 - Transport – subject to highway improvements already approved in connection with the wider employment use of the site, Meaford Business Park has road access capable of accommodating construction traffic for a CCGT power station. Once constructed the amount of traffic generated from the use would be minimal. There are likely to be approximately 30 employees working across a 24 hour period. The majority of traffic generated by these users will be cars and light commercial vehicles rather than HGVs. On this basis, it is likely that the CCGT power station would result in a net reduction of the road traffic generated by a full development of the Meaford Business Park site for the uses already approved.
 - Planning context – the Meaford Business Park site is identified in Stafford Borough Council's adopted and emerging development plans as a major developed site within the green belt, suitable for partial or complete redevelopment (see the planning policy technote that accompanies this note).
19. On the basis of these criteria, MEL considers that the site is a sustainable development location. The company aims to develop proposals for a CCGT gas-fired power station that reflects a detailed understanding of the interplay of these site considerations, with the aim of delivering a project that fits comfortably within the Meaford Business Park and supports relevant environmental, social and economic sustainability objectives. Similarly, MEL aims to achieve the gas and electricity grid connections in a sensitive manner.

THE POWER STATION BUILDINGS

20. According to paras. 4.5.1 to 4.5.2 of National Policy Statement EN-1:

4.5.1 The visual appearance of a building is sometimes considered to be the most important factor in good design. But high quality and inclusive design goes far beyond aesthetic considerations. The functionality of an object — be it a building or other type of infrastructure — including fitness for purpose and sustainability, is equally important. Applying ‘good design’ to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible. It is acknowledged, however that the nature of much energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area.

4.5.2 Good design is also a means by which many policy objectives in the NPS can be met, for example the impact sections show how good design, in terms of siting and use of appropriate technologies can help mitigate adverse impacts such as noise.

21. Paras. 9, 17 and 56 of the NPPF highlight the relevance of good design to sustainable development. In the light of this, and given the importance that the Planning Act 2008 places on good design and sustainability, MEL intends to demonstrate that its proposals are sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable as can feasibly be achieved. To this end, the design process will take into account both functionality and aesthetics. MEL will also demonstrate a responsive design approach in terms of siting relative to existing landscape character, landform and vegetation. These principles will apply both to the CCGT power station and the electricity grid and gas network connections.
22. In accordance with advice given in para. 4.5.4 of EN-1, MEL will demonstrate in its application documents how the design process was conducted and how the proposed design evolved. Where a number of different designs are considered, MEL will set out the reasons why the favoured choice has been selected.
23. MEL’s proposals will also take into account.
- *construction standards* – including the energy performance of the built envelope and the potential to use locally-sourced construction materials;
 - *energy use* – the efficient use of energy for heating, lighting and cooling within the CCGT power station, including the effective use of daylighting in the office buildings on the site;
 - *waste minimisation and recycling* – including the avoidance of waste during construction and the ability to recycle building materials at the end of CCGT power station life.

GAS AND ELECTRICITY GRID CONNECTIONS

24. The National Policy Statement for Electricity Networks (EN-5) 4 provides further guidance on the delivery of electricity transmission distribution systems of 132 kilovolts (kV) and over. EN-5 supplements the advice in EN-1. In section 2.2 it identifies some of the factors influencing site selection for transmission lines. In addition to the location of the infrastructure that the line would connect, these include land ownership and landscape and visual considerations. According to para. 2.2.6:

As well as having duties under section 9 of the Electricity Act 1989, (in relation to developing and maintaining an economical and efficient network), developers will be influenced by Schedule 9 to the Electricity Act 1989, which places a duty on all transmission and distribution licence holders, in formulating proposals for new electricity networks infrastructure, to “have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and ... do what [they] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.” Depending on the location of the proposed development, statutory duties under section 85 of the Countryside and Rights of Way Act 2000 and section 11A of the National Parks and Access to the Countryside Act 1949 may be relevant.

25. EN-5 also identifies environmental effects particular to electricity transmission lines that require assessment. These are:
- *biodiversity and geological conservation* - including any effects of the proposals on areas used by wildlife for feeding, migration or breeding;
 - *landscape and visual* – in respect of which, EN-5 advises the promoters of projects to apply the ‘Holford Rules’, which concern the sensitive routing of overhead lines;
 - *noise and vibration* – including the need to avoid any audible crackle or humming sounds that can arise from overhead lines during wet weather;
 - *electric and magnetic fields* – including the effects on public health and aviation.
26. Beyond these considerations, the sustainable development considerations that MEL will take into account in the routing and design of these grid connections will include:

⁴ Presented to the UK Parliament in July 2011 pursuant to section 5(9) of the Planning Act 2008.

- the length of route options – working on the principle that the shorter routes cause less environmental disturbance during construction and consume less physical resources;
- environmental, economic, social and health effects – avoiding significant harm to local interests;
- construction – the use of methods and materials that minimise waste and promote recycling at the end of operational life.

CONSTRUCTION MANAGEMENT

27. MEL will consider a range of measures to ensure that the delivery of the proposed CCGT power station and related infrastructure takes place in a sustainable manner. These will include the use of locally-sourced construction materials, where feasible and viable. This measure would help to retain wealth in the local economy and reduce the distance over which materials are transported. The contractor will be selected partly on the basis of its ability to employ local construction workers, again to retain wealth locally.
28. A Construction Traffic Management Plan will be submitted with the DCO application for the site. The contractor will also be required to achieve a 'best practice' score under the Considerate Contractors scheme to minimise construction effects. A community liaison group will be established to provide for an open and timely exchange of information during the construction phase of the project.
29. To ensure appropriate environmental protection during the construction stage, a construction environmental management plan will be implemented. This will incorporate provisions for effective environmental monitoring.

CONCLUSIONS

30. Through the various measures outlined, MEL proposes to take a comprehensive approach to sustainability that will embrace:
 - i) the environmental, social and economic dimensions of sustainable development . .*
 - ii) as expressed at all levels of policy – local, national and international . .*
 - iii) at all stages of the project - siting, design, construction, grid connection, operation and ultimate decommissioning of the project, and . .*
 - iv) supported by appropriate community engagement.*
31. MEL invites feedback on the adequacy of this approach and the means by which it can be implemented to best effect in the environmental, social and economic interests of the local and wider communities.