

PROPOSED MEAFORD ENERGY CENTRE

PROJECT SUMMARY 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 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.

THE PROMOTER AND THE PROJECT TEAM

3. MEL is a joint venture between St. Modwen, the UK's leading regeneration specialist, and Glenfinnan Properties. The joint venture was established to promote the development of CCGT power stations and had identified St. Modwen's Meaford Business Park as a potential location. Both companies have extensive experience in the development and economic regeneration of sites throughout the UK and also have extensive experience in the energy sector.
4. MEL has employed a project team comprising:
 - Atkins – engineering design and environmental consultants
 - Savills – town planning and property consultants
 - Local Dialogue – community and stakeholder relations
 - Pinsent Mason – legal advisers
5. The team is tasked with developing the CCGT power station proposals in dialogue with Stafford Borough Council and Staffordshire County Council, the local community and other key stakeholders.

ESSENTIAL ELEMENTS OF A CCGT POWER STATION

6. A CCGT power station utilises an efficient combination of gas and steam turbines to generate electricity. Figure 1 presents a simple diagram of how a CCGT power station works.

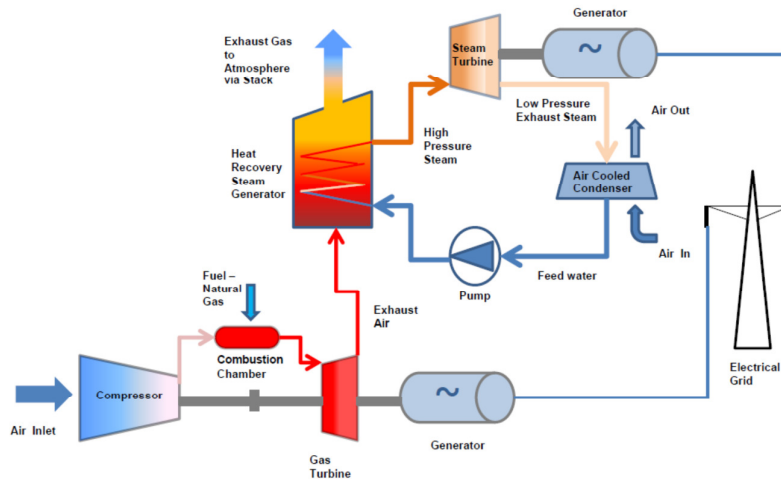


Figure 1: Schematic representation of the CCGT Process

7. Natural gas is burnt with compressed air producing hot combustion gases in a gas turbine. The turbine spins a generator that produces electricity. The excess heat is used to heat water to produce steam. This steam is then fed into a second steam turbine also linked to a generator to create additional electricity. This is what is meant by a 'combined cycle'.
8. A CCGT of 299MW capacity would typically have one or two gas turbines and a single steam turbine housed in turbine buildings. Exhaust gases from the gas turbines would be vented through exhaust stacks. The CCGT power station would also include a cooling system and an electricity sub-station on-site. In addition there would be smaller buildings for the station control room, offices, stores and water treatment plant.
9. In total, the typical area occupied by a 299 MW CCGT power station would be approximately 2 – 3 hectares.
10. The key building elements could be expected to be as follows:
- Steam turbine building – typically 26m wide, 45m long, 18m high
 - Gas turbine building – typically 45m wide, 60m long, 20m high
 - HRSG buildings – typically 13m wide, 25m long, 33m high
 - Cooling system – approximately 48m square, 26 high
 - Chimney stacks – approximately 5m in diameter and up to 45m high

THE MEAFORD ENERGY CENTRE PROPOSALS AT MEAFORD BUSINESS PARK

11. It is envisaged that the CCGT power station at Meaford Business Park would have three main elements.
 - The CCGT generating station which will include the major items of plant and equipment.
 - The connection to the gas network through a new underground pipeline.
 - The connection to the electricity network through existing electrical equipment within Meaford Business Park.

GAS CONNECTION

12. Meaford Business Park is located less than 700m from existing National Grid local gas transmission system pipelines to the north and east of the site. An area has been identified in which a connection could be made by underground pipeline (Figure 3).
13. At this stage, the exact location of the gas pipeline connection has not been determined as this would need to be informed by more detailed technical and environmental studies as well as taking account of feedback received during the consultation process.

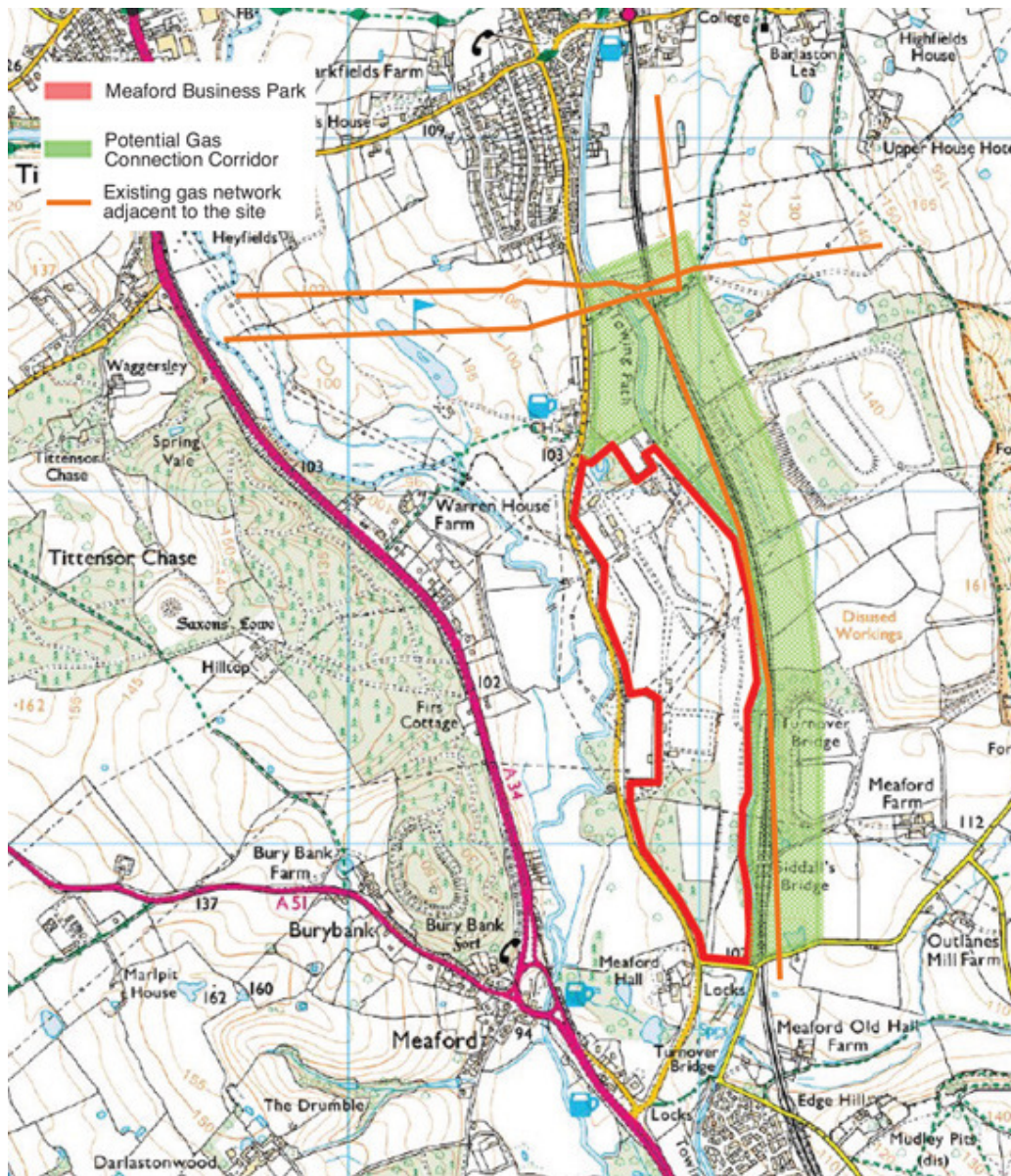


Figure 3: Gas Connection Area

ELECTRICAL CONNECTION

14. The proposed CCGT power station will need to connect to the electricity network. The consideration of an electrical connection has taken account of the power output from the new station and the maximum capacity that can be exported from the site considering the capacity of the current or planned future infrastructure.
15. Preliminary discussions have been held with the distribution network operator, Western Power Distribution (WPD) to gather information on their current and planned investments into the electricity infrastructure in this region.

16. During initial discussions with WPD various options were discussed. These options included:-
- Connecting directing into WPD's 132kV lines or substations located within Meaford Business Park
 - Connection directly to a remotely located WPD substation via new 132kV lines
 - Connection to WPD network requiring the upgrade of existing 132kV lines
17. At this stage it has been identified that the existing WPD infrastructure within Meaford Business Park could accommodate the connection of the CCGT power station without the need for new 132kV lines or significant network reinforcement. If however following more detailed investigations the existing 132kV network cannot accept the CCGT power station, replacement/new 132kV lines could be required. Whether these lines are overhead lines or underground cables has complex technical, cost and environmental pros and cons.

CARBON CAPTURE AND STORAGE

18. The capture and storage of carbon emissions (CCS) from power stations that burn fossil fuels is the subject of ongoing policy development by the government. At present, there is no requirement for the emissions of carbon to be captured from this CCGT power station due to its size being lower than the government's minimum threshold, which is 300MW.
19. Carbon capture technology will therefore not form part of the proposals.

COMBINED HEAT AND POWER AND THE 'ENERGY CENTRE' CONCEPT

20. Large power generation facilities present a potential opportunity to provide local users (existing businesses and future new developments) with a secure and economic source of combined heat and power (CHP). This would require heat transport pipework and electrical cables to be installed typically through existing roads and verges.
21. CHP can be implemented more successfully where the necessary network is established prior to the construction of new buildings, and at the Meaford Business Park site it offers the opportunity to develop such a network to stimulate development of the remainder of the site.
22. A CCGT power station on Meaford Business Park would make the location more attractive to businesses, which would benefit from being located in close proximity to a secure supply of power together with the potential opportunity to take surplus heat generated by the proposed Meaford Energy Centre which will help reduce their carbon footprint.