

SUPPORTING STATEMENT

Planning application for a small-scale gas-fired standby electricity generation facility on land north of Twibell Street, Barnsley, S71 1JE

Prepared by:
UK Capacity Reserve Limited
6th Floor,
Radcliffe House,
Blenheim Court,
Solihull,
West Midlands,
B91 2AA.

Company no. 07385282



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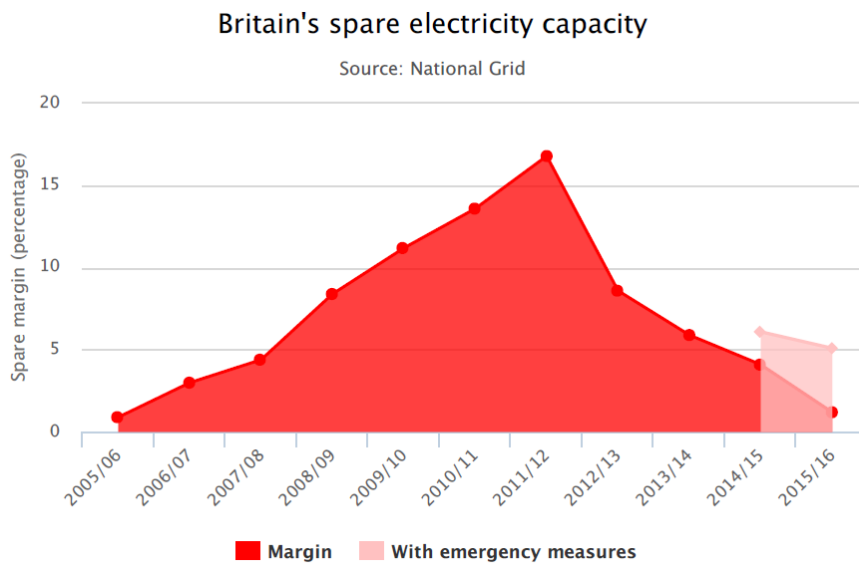
1. INTRODUCTION

- 1.1 This Supporting Statement has been in support of a full planning application to be submitted by UK Capacity Reserve Limited (“UKCR”) for a small-scale gas fired electricity generating facility on land north of Twibell Street, Barnsley, S71 1JE (the “Proposed Development Site”).
- 1.2 The Proposed Development will contribute to a national programme to fulfil demand for energy during peak electricity periods known as Short Term Operating Reserve (STOR). The Proposed Development will also provide local energy security as, unlike national energy generation, it will feed electricity into the local electricity network at the point of need thereby ensuring that the lights stay on for local residents and businesses. UKCR has considered both gas and diesel local energy generation and concluded by using gas it provides a reliable and responsive energy supply using technology which minimises emissions to the environment.

2. PROPOSED DEVELOPMENT RATIONALE

Need for the development

- 2.1 UKCR proposes that the principal use of the Proposed Development Site will be for the provision of standby electricity. The generating facility will operate through a series of gas fuelled engine generators with a thermal input of less than 50MW and a continuous electrical output of 20MW.
- 2.2 Ofgem, Department for Business, Energy & Industrial Strategy and National Grid have been working together to implement options that will provide consumers with additional safeguards against the increased risk to mid-decade security of supply known as the Electricity Market Reform (EMR). The EMR introduces two key mechanisms to provide incentives for the investment required in our energy infrastructure.
- Contracts for Difference (CFD) provides long-term price stabilisation to low carbon plant, allowing investment to come forward at a lower cost of capital and therefore at a lower cost to consumers.
 - The Capacity Market provides a regular retainer payment to reliable forms of capacity (both demand and supply side), in return for such capacity being available when the system is tight.



- 2.3 National Grid has a target to operate with a reserve of 20% in order to accommodate sudden peaks in demand. During the Winter 2016/17 this reserve capacity was as low as 6.6% which is still significantly

short of the 20% target and represents only a slight improvement when compared with Winter 2015/16 when the capacity margin was 5.1%, the lowest since 2007/08¹.

- 2.4 The electricity margin has been described as ‘tight but manageable’ by National Grid who were forced to issue a Notification of Inadequate System Margin (NISM) in May 2016, calling for an increase in power generation to meet demand. This was the second NISM in 6 months, following a similar notification in November 2015. Before that a NISM had not been issued since 2012, and before that in 2009. The increase use of this mechanism demonstrates the narrowing buffer between demand and available supply and reinforces the need for this Proposed Development.
- 2.5 It is proposed that the generating facility will participate in the National Grid’s Capacity Market (CM) programme. This provides balance to the National Grid during unexpected periods of high demand for electricity or where there are constraints on electricity generation available in England and Wales. National Grid will call upon an electricity generator such as UKCR to generate electricity from its assets on demand under this programme through projects such as the one subject of this planning application.

Benefits of the Proposed Development

- 2.6 The Proposed Development will provide electricity which will meet the Electricity Market Reform objectives which are:
- decarbonise electricity generation by providing certainty to support renewable energy generation.
 - keep the lights on by being able to react to peaks in consumer demand
 - minimise the cost of electricity to consumers by providing a cost effective solution
- 2.7 The carbon efficiency of the proposed 20MW generating facility is significantly increased when compared to a fossil fuel dominated centralised system because it will be used to supply power to the local distribution network at or near to the point of need i.e. where the power is actually to be used. Transmission losses which may otherwise occur over long distances may then be significantly reduced.
- 2.8 A further benefit of this sort of power generation project is its flexibility; it will be quickly turned on or off, as and when required. Other alternative forms of power generation are not this flexible, whilst those that should be flexible are more inefficient, and/or are incapable of producing electricity in such discrete quantities as the generating facility which is the subject of this application (20MW).
- 2.9 Local small scale generation is less susceptible to widespread power failure because if one power generating facility fails to operate, the net effect is that far fewer MW are lost from isolated small scale facility failure because other similarly sized facilities will remain operational. In contrast, when a large

¹ National Grid Winter Outlook Report 2016/17

power station goes 'off line' and all its output is lost, then this may result in many more MW 'lost' in any one failure.

- 2.10 The Proposed Development will be powered by natural gas as this is significantly cleaner than diesel. In addition, gas powered generators emit minimal CO₂. Mains gas will be used as that will not require storage or movement of large amounts of combustible fuel on the site.
- 2.11 The Proposed Development will not create significant levels of direct employment. However, the STOR programme could generate up to 2 new jobs across the region for field service engineers, as well as temporary employment for the construction contractors and their employees. In addition, the Proposed Development will support existing and new local businesses and future job creation by providing electricity during periods of peak electricity demand and ensuring that they are not subject to electricity blackouts.

UK Energy Mix

- 2.12 The UK energy generation mix is changing as more renewables are integrated into the mix and large fossil fuelled power stations face closure due to environmental legislation or challenging economics. This creates an issue of managing a safe and secure power supply for the nation and as the energy generation mix changes so do the electricity margins (these margins being the differences between the energy which is needed to meet peak demand and the energy that is actually available).
- 2.13 In 2001 the EU issued the Large Combustion Plant Directive ("LCPD") which was introduced to reduce carbon output. Under the LCPD most UK coal fired power stations are required to close in the next few years, and all affected stations by at least 2025.
- 2.14 The retirement of the life expired nuclear generation power stations is also scheduled to occur over the same period as the closure of the large coal fired stations. The programme for completion of replacement nuclear stations is well behind schedule. In addition, the increasing size of these new nuclear power stations increases the impact of any short-term loss of capacity at a particular facility. The prospect of a reduced capacity margin in the UK is therefore very high and there is an even greater requirement for rapid response, reserve power.
- 2.15 Wind farms and solar parks do not have predictable outputs. Both wind and solar are inherently intermittent as generators and are not a 'like for like' replacement for the retired coal (and nuclear) base load generation. Again, this means an enhanced requirement for a flexible, fast acting response from other types of generation, in order to meet demand.
- 2.16 There is a real challenge to security of supply due to closure of the coal fired power stations, the delay in replacing the nuclear fleet and the unpredictability of output of renewable energy (wind and solar).
- 2.17 A key feature of STOR is that it is generally only used at times of 'stress' on the network, which are very infrequent – typically less than 300 hours per annum. STOR generation is the last line of defence to

prevent serious power fluctuations and potential blackouts². In these circumstances, power will be fed into the local grid and local businesses and residents will be able to make use of UKCR's power to keep the lights on.

² National Grid: Operating the Electricity Transmission Systems in 2020; Follow Up Report; February 2010

3. SITE SELECTION

- 3.1 A number of factors beyond planning need to be considered when selecting a site suitable for the Proposed Development. These include but are not limited to:
- proximity to available 33kV electricity network;
 - proximity to available medium pressure gas main;
 - commercially available land;
 - proximity to residential uses; and
 - other physical land constraints.
- 3.2 Electricity networks in the UK were originally designed to support centralised power generation feeding outwards to meet local demand loads. A number of technical factors limit the opportunity to connect local generation, each case is location specific and treated individually by the local electricity network operator.
- 3.3 UKCR's generation sites are economically constructed in the range of 10MW to 20MW electrical output. Electricity networks will typically accept 10MW to 20MW only on the 33kV 'level' of the local network.
- 3.4 The Proposed Development Site was chosen for its proximity to the Western Power Distribution substation which provides access to the local network without having to build major infrastructure, keeping connection costs to an acceptable level.
- 3.5 The Proposed Development will be powered by natural gas as this is significantly cleaner than diesel. In addition, gas powered generators emit limited CO₂. Main gas will be used rather than storing of large amounts of combustible fuel on the site. Due to this decision, it is necessary to secure a connection to a viable medium pressure gas main.
- 3.6 The Proposed Development Site comprises vacant brownfield land, which reduces the impact on available land and provides a more acceptable planning use on a redundant site, which will otherwise remain vacant. The site is located within the settlement boundary of Barnsley but does not benefit from a specific Local Plan designation. It is located approximately 50m from the nearest residential receptor. This is considered in further detail in the Planning Statement.
- 3.7 This combination of factors means that the Proposed Development is a viable economic option for the Barnsley area, helping to improve the security of electricity supply for local residents and businesses.

4. PROPOSED DEVELOPMENT DESCRIPTION

Proposed Development Site

- 4.1 The Proposed Development Site is located on land north of Twibell Street, Barnsley, S71 1JE. The site is accessed via an existing access on Twibell Street.
- 4.2 The Proposed Development Site has an area of approximately 0.34 hectares and is outlined in red on the accompanying Location Plan (Ref: 17260/101: Rev.2a) at Appendix A.
- 4.3 The Proposed Development Site is situated approximately 50m north of the residential properties on Twibell Street. It is not anticipated that the Proposed Development will have any significant impact on this property or any other residential property in the vicinity.
- 4.4 The Proposed Development Site is located within an existing industrial estate with evidence of former gas holder. The site comprises a concreted area with small ruderals and grasses growing along seams between the concrete slabs. There are some piles of earth and landscaping debris. To the east of the site is a distribution warehouse. The north west corner is the location of the former gas holder with additional industrial buildings to the west. Beyond the immediate boundary to the north is the River Dearne and the Dearne Valley Country Park. To the south is Twibell Street and Barnsley Park Trading Estate.

Proposed Development

- 4.5 The Proposed Development will consist of a maximum of 14 generators, each in their own soundproofed engines cell together with the ancillary infrastructure as set out below. The layout is shown in the accompanying Site Plan (Ref: 17260/102: Rev.2a) at Appendix B, and Elevation Drawing (Ref: 17260/103: Rev.1) at Appendix C.
- 4.6 At this time, a final selection of the generators has not been made for commercial reasons although it is known that the output will be 20MW. The Proposed Development will consist of either 14 x 1.5MW generators or 10 x 2.0MW generators. These generators will be gas fired. In preparing the environmental assessments a 'worst-case' scenario has been modelled and it is known that impacts, whichever generator is selected, will not exceed those stated in the conclusions of the noise, air quality, ecology and visual environmental assessments.

Component Project Description

Generators

- 4.7 The Proposed Development consists of a maximum of 14 generators to produce standby electricity generation for National Grid.

- 4.8 Each proposed generator will be housed within an individual soundproof metal container and set out as shown on the Site Plan (Ref: 17260/102 Rev.2a). Each container will be approximately 12.2m x 3.0m x 2.6m and will be finished in a matt fern green, similar to RAL6025.
- 4.9 Each container will include a bank of radiators located on the roof, approximately 3.0m high, to assist in cooling the generators together with an exhaust stack of 13.6m from ground level, or 7.6m from radiator top, to allow the safe dispersion of exhaust gases. Air quality data and a noise impact assessment have been provided to demonstrate that the emissions do not breach guideline limits at nearby receptors.
- 4.10 The engine technology to be used will consist of the Best Available Technology (“BAT”) for the purpose of small scale, rapid start standby generation, and being connected to the electricity distribution network close to the point of use, offers additional efficiency improvements over larger scale facilities. The generators will be fuelled by mains gas thereby avoiding diesel emission and storage and transport issues.
- 4.11 The proposed engines are more efficient than those used in open cycle gas turbines and coal stations, both of which operate within a lower efficiency range. Gas supply has been selected as, unlike diesel, this has fewer NO_x emissions and minimal CO₂ emissions. In addition, further carbon efficiency is achieved through the savings in long distance transmission losses (because the generating station will be connected to the electricity distribution network close to the point of use). The overall carbon impact is further reduced because the generating facility only operates for a low number of hours per year.

Main and auxiliary transformer compound

- 4.12 The purpose of the main transformer compound will be to convert the normalised voltage to high voltage to enable it to be imported to the grid. The transformer will consist of a metal electrical box. Mounted on each side will be a radiator to dissipate any excess heat.
- 4.13 The auxiliary transformer will supply electricity to the on-site equipment for the monitoring and welfare facilities.
- 4.14 The transformers will be located within a secure compound which will be fenced and set out as follows. The overall dimensions of the compound will be approximately 10.8m x 6.8m with a maximum height of 4.0m. The equipment will be finished in a matt grey colour, similar to RAL7036 and will be surrounded by a standard vehicle crash barrier.
- 4.15 The Proposed Development Site will import and export electricity via an underground cable connected to the substation of the local Distribution Network Operator, Western Power Distribution.

Gas Reception Kiosk

- 4.16 The purpose of the gas reception kiosk will be to meter gas use. This will consist of a GRP container and will be finished in a matt fern green colour, similar to RAL6025. The container will be approximately 5.8m x 3.2m x 2.2m.

- 4.17 The gas fuel supply will connect from the local gas distribution network adjacent to the site by underground pipework. There will be no bulk storage of gas on the site.

Lubrication Oil Storage Tank

- 4.18 The purpose of the lubrication oil storage tank will be to provide storage for new and used lubrication oil so that large vehicle site visits are reduced in frequency. It is proposed to install two storage tanks; one for waste oil and one for fresh oil. Both directly piped into the engine containers with a storage capacity of 5000 litres. The tanks will measure approximately 2.7m x 1.8m x 1.5m. They will be contained within a double bunded steel cell to ensure that should either tank leak, the contents of which will be contained and the clean-up will be possible without any impact on the surrounding environment.

Control and Welfare, Electrical and Secure Storage and Workshop Buildings

- 4.19 The 'portacabin' style buildings will provide ancillary facilities for the field engineer and any other visitors when on site. It will consist of three buildings. The High Voltage/Low Voltage (HV/LV) switch room will be 12.2m x 3.8m x 3.2m and placed on 1.8m stilts. Two further buildings will provide control and workshop facilities; each will be approximately 6.1m x 2.4m x 3.2m. The control room will be on 1.8m stilts. The finish of these buildings will be matt fern green, similar to RAL6025.

Security Fencing

- 4.20 The security fencing will seek to ensure that the facility remains secure at all times. This will be a 2.4m high paladin style fence and finished in matt fern green, similar to RAL6025. The internal fencing for the transformer compounds will be approximately 1m in height and will be a standard galvanised steel vehicle crash barrier similar to those seen on the highways.

Drainage

- 4.21 Surface water will drain to the existing drainage system via an interceptor. The foul water will discharge to an above ground septic tank. There will be no risk to human health from flooding and the Proposed Development will not increase the risk of flooding elsewhere.

Lighting

- 4.22 Lighting for the exterior of the site will be in use only when operatives are on site. At all other times, there will be no external illumination. The lighting design will comply with the requirements of Table 2 of the 'Guidance Notes for the Reduction of Obtrusive Light GN01: 2011' published by the Institution of Lighting Professionals. It is proposed that a dynamic lighting assessment is undertaken prior to operation which will ensure light fittings will be selected and located to minimise external light impact whilst providing protection and security for on-site staff.

Waste

- 4.23 On site waste will be collected by an approved waste disposal contractor. This waste will be limited to packaging materials for consumables and maintenance waste.

5. DEVELOPMENT PHASES

5.1 The development of the site can be split into three distinct phases:

Phase 1: Construction

The construction period for the development is expected to last up to 14-weeks and consist of 4 tasks; ground works, infrastructure installation, equipment installation and testing and commissioning. Proposed vehicle movements are set out later in this report.

Phase 2: Operation

The site will operate on an unmanned basis with ad hoc visits from field service engineers for check-ups and maintenance during normal working hours. The electricity generating facility will be remotely operated and monitored by National Grid and UKCR at their respective head offices (UKCR's head office being 6th Floor Radcliffe House, Blenheim Court, Solihull, B91 2AA). In cases of unexpected facility operational issues the site may be visited outside of these hours.

Phase 3: Decommissioning

It is anticipated that, upon termination of the generation licence, the generators and infrastructure will be removed and the site reinstated prior to hand back to the landowner. This will be agreed with the landowner prior to the end of the generation licence.

6. ACCESS AND MOVEMENT

6.1 As set out earlier in this Statement, the site is located on land north of Twibell Street, Barnsley, S71 1JE. The site is accessed via an existing access on Twibell Street.

6.2 The construction period is expected to last up to 14-weeks and consist of 4 tasks; ground works, infrastructure installation, equipment installation and testing and commissioning. During this time, there will be in the order of 28 large vehicle trips (listed red in the table), equating to 56 movements (i.e. to and from the site). In addition, there will be a number of light goods vehicle (i.e. cars and vans) movements during this period.

	Programme (in weeks)													
Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ground Works	4	4	4		4	4								
Infrastructure					5 + 5	5 + 5	5							
Equipment							4	4	4	2				
Testing and commissioning											2	2	2	
General	10	10	10	10	10	10	10	10	10	10	10	10	10	10

6.3 The installation of the generating equipment will be enabled by crane and other specialist equipment and this process is anticipated to take four months. It will be undertaken by expert contractors approved by UKCR.

6.4 All construction vehicles will be able to enter and exit the site using forward gears. Scheduling of deliveries will ensure that no vehicles will be required to park on the public highway.

6.5 During operation, the site will operate on a remote controlled, unmanned basis. The site will be visited once per week by a field service engineer using a small commercial van. Parking for UKCR's field service engineers, and approved contractors, who will visit the site on an irregular, ad-hoc basis, will be on site with the provision of two car parking spaces.

6.6 The Proposed Development will not have an adverse effect on the local highway network as traffic movements to and from the site will be minimal during operation.

7. SUPPORTING ENVIRONMENTAL INFORMATION

- 7.1 The potential impact from the Proposed Development Site on surrounding communities, landscape and wildlife is a factor that UKCR has considered greatly in preparing this planning application.
- 7.2 It is acknowledged that local perception in relation to developments of this nature could sometimes be less than positive. It is therefore essential to effectively demonstrate that the Proposed Development Site should become a trusted and beneficial component of the infrastructure of the local community. To achieve this a comprehensive schedule of works is carried out in order to measure any potential adverse impacts arising and to further demonstrate how this will be managed sustainably going forward.
- 7.3 At this time, a final selection of the generators has not been made for commercial reasons although it is known that the output will be 20MW. The Proposed Development will consist of either 14 x 1.5MW generators or 10 x 2.0MW generators. Both of which will be fuelled by mains gas. In preparing the environmental assessments a 'worst-case' scenario has been modelled and it is known that impacts, whichever generator is selected, will not exceed those stated in the conclusions of the noise, air quality and visual environmental assessments.

Noise

- 7.4 A noise assessment has been carried out in accordance with the guidance contained in British Standard 4142:2014 and 8233:2014 and is based on the results of a baseline noise survey undertaken at a location representative of the noise environment at the nearest sensitive receptors to the Proposed Development over weekend daytime and night-time periods. The results of the assessment are set out in full within the report contained at Appendix D.
- 7.5 The report concludes that, as the Proposed Development will operate intermittently, and typically during the daytime only, any mitigation required should be discussed with reference to the daytime limits presented in BS8233:2014; limits that have been set to protect the internal and external noise environment of sensitive receptors. In order to meet the internal noise limit of 35dB(A) during the daytime, assuming that an open window would reduce external noise levels by 15dB(A), the noise level generated by the Proposed Development at the southern boundary of the facility must not exceed 58.1dB(A). If this limit is not exceeded the internal daytime noise limit at Twibell Street would not exceed 35dB(A) and the daytime external noise limit would not exceed 50dB(A). This limit may be achieved through the selection of quieter generators and mitigation measures to include an acoustic fence at the southern boundary of the site.
- 7.6 Considering the above recommendations, an acoustic fence is included at the southern boundary as shown in Site Plan (Ref: 17260.102 Rev.2a).

Ecology

- 7.7 An ecological appraisal has been undertaken to review the ecological value of the Proposed Development Site and is contained at Appendix E.
- 7.8 The appraisal confirms that impacts upon designated sites, habitats, protected and notable species have been assessed and measures to avoid adverse effects have been proposed. Whilst no significant impacts are predicted, the adoption of a sensitive lighting scheme, implementation of best practice pollution prevention measures, retention of the existing northern boundary concrete fence, and the avoidance of vegetation clearance during the bird breeding season, is recommended to reduce impacts to negligible levels.
- 7.9 It is considered that no impacts upon designated sites within proximity to the Proposed Development are predicted with the prescribed mitigation measures in place, either alone or in combination with other developments.
- 7.10 Overall, it is concluded that with the implementation of the proposed mitigation measures detailed within the appraisal, the Proposed Development is unlikely to result in any significant negative impacts upon important ecological features identified, and no contravention of relevant wildlife legislation is anticipated. If the recommendations with respect to ecological enhancements are implemented, it is considered that the Proposed Development provides an opportunity to deliver a net gain for biodiversity at the site in the longer term.

Air Quality

- 7.11 In accordance with NPPF, paragraph 109 states that the planning system should prevent both new and existing development from contributing to, or being put at unacceptable risk from unacceptable levels of pollution including from air. A review has been undertaken of the emissions from the Proposed Development. Specifications of the two generator options are included in Appendix F.
- 7.12 NPPF paragraph 124 goes on to say that the Proposed Development should comply with EU limit values and these are provided in the Air Quality Standard Regulations 2010. The relevant limit values are set out below:

Pollutant	Concentration (µg.m-3)	Measured as
NO2	200	1-hour mean, not to be exceeded more than 18 times a year (99.79 %ile)
	40	Annual mean
CO	10,000	Maximum daily 8-hour mean

NOX	30	Annual mean for the protection of vegetation
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- 7.13 Given that the Proposed Development is for the combustion of gas for relatively short periods of time, it is considered that, even in the 'worst case', the Proposed Development will not exceed the above EU limit values and therefore air quality is not considered to be a significant consideration for the Proposed Development.

Visual Impact

- 7.14 A visual assessment has been undertaken in relation to viewing the site from all publicly accessible locations. The Proposed Development Site is located within an existing industrial estate. The site is located near to the River Dearne and Dearne Valley Country Park and a photomontage has been prepared from varying distances looking at the site towards the Proposed Development from the south. This is provided in Appendix G. This shows that, due to the screening effect of the intervening vegetation, there will be no visibility of the Proposed Development from this location. It is therefore concluded that the visual impact of the Proposed Development is negligible.

Coal Mining Reporting Area

- 7.15 The Proposed Development Site is within a Coal Mining Reporting Area. A combined Groundsure Screening and CON29M Coal Mining Risk Assessment has been prepared and is included in Appendix H.
- 7.16 The assessment concludes that due to the proximity of the gas holder to the north west there is potential contaminative land uses at the site. Whilst potential contaminative historical land uses and a historical landfill have been identified in proximity to the site, Groundsure has identified a potential contaminant-pathway-receptor relationship that may give rise to significant environmental liability and this will be addressed through an intrusive survey which will be undertaken prior to the commencement of construction activity and therefore could be subject of a condition on the decision notice.

8. CONCLUSION

- 8.1 The Proposed Development will contribute to a national programme to fulfil demand for energy during peak electricity periods known as STOR. The Proposed Development will provide local benefits through energy security as, unlike national energy generation, it will feed electricity into the local electricity network at the point of requirement thereby ensuring that the lights stay on for local residents and businesses.
- 8.2 UK Capacity Reserve is the UK's leading independent developer and operator of smart, flexible power generation. As a leading independent smart energy business, UKCR has a proven track record of safely, reliably, and successfully operating a geographically-diverse portfolio of assets dedicated solely to providing the UK with critical security of supply.
- 8.3 The technology proposed is the Best Available Technology "BAT" as recognised by Environment Agency for the purpose of rapid start standby generation and being connected to the network at the point of use offers demonstrable efficiency improvements over non-distributed current standby generation. Gas supply has been selected as, unlike diesel, this has fewer NO_x emissions and limited CO₂ emissions.
- 8.4 The STOR programme could generate up to 2 new jobs across the northern region for field service engineers, as well as employment for the construction contractors and their employees. In addition, the Proposed Development will support existing and new local businesses and future job creation by providing electricity during periods of peak electricity demand and ensuring that they are not subject to electricity blackouts.
- 8.5 All car parking and deliveries will use the existing site access provision. During construction, vehicle movements will be kept to a minimum to ensure there is no adverse impact to the local road network or its users. During normal operation, the site will be unmanned, however field service engineers will visit the site on an ad hoc basis to undertake general maintenance.
- 8.6 Through the provision of supporting studies the applicant has demonstrated that the environmental impacts in relation to noise emissions, air quality, ecology and visual impact will not be significant on the environment or local residents and therefore, as set out in the Planning Statement, the development conforms with local and national planning policy or demonstrates why there are material planning considerations why a departure is deemed appropriate.
- 8.7 The project has been approved by OFGEM, National Grid and Western Power Distribution as the relevant DNO. As such UKCR, as the applicant, respectfully suggests that this Supporting Statement has demonstrated that there are no significant adverse environmental impacts and that there are material considerations that should enable Barnsley Metropolitan Borough Council to approve this planning application.

9. GLOSSARY OF TERMS

Balancing Mechanism: One of the tools National Grid uses to balance electricity supply and demand close to real time. It is needed because electricity cannot be stored and must be manufactured at the time of demand. Where National Grid predicts that there will be a discrepancy between the amount of electricity produced and that which will be in demand during a certain time period, they may accept a 'bid' or 'offer' to either increase or decrease generation (or consumption). The balancing mechanism is used to balance supply and demand in each half hour trading period of every day.

Best Available Technology ("BAT"): Best available technology (or just BAT) is a term applied with regulations on limiting pollutant discharges with regard to the abatement strategy. Similar terms are best available techniques, best practicable means or best practicable environmental option. The term constitutes a moving target on practices, since developing societal values and advancing techniques may change what is currently regarded as "reasonably achievable", "best practicable" and "best available".

Capacity Market: A new market introduced by the National Grid and which has as its objective the securing of future capacity to meet the UK's capacity requirements for years to come. The Capacity Market is designed to cost effectively bring forward the amount of capacity needed to ensure security of electricity supply. It will do this by correcting market failures and providing a predictable revenue stream to capacity providers. The level of revenue will be set through a competitive auction process and in return for payment successful providers must commit to deliver energy when needed or they will face penalties.

Department for Business, Energy & Industrial Strategy (DBEIS): The department brings together responsibilities for business, industrial strategy, science, innovation, energy, and climate change by ensuring that the country has secure energy supplies that are reliable, affordable and clean and tackling and mitigating impacts of climate change.

Distribution Network Operator (DNO): Distribution Network Operators own and operate the distribution network of towers and cables that bring electricity from our national transmission network to homes and businesses. They do not sell electricity to consumers. This is done by the electricity suppliers.

Electricity Market Reform (EMR): The Department for Business, Energy & Industrial Strategy's statutory consultation on the government's preferred electricity market framework. The Government sees nuclear, renewables and carbon capture and storage (CCS) as essential elements of the UK low carbon electricity mix needed to achieve its energy and climate policy goals. It recognises that to deliver this new low carbon generation with stable, predictable and transparent returns, a redesign of the market mechanism is required. As a result the EMR was launched in December 2010. The EMR is specifically targeted at addressing investor criteria, to make the UK an attractive place for energy investments.

Embedded (or Distributed) Generation: The generation of electricity from small energy sources. The UK predominantly generates electricity in large centralised facilities, such as fossil fuel (coal, gas powered), nuclear, large solar power plants or hydropower plants. These plants have excellent economies of scale, but usually transmit electricity long distances which can negatively affect the environment. Embedded generation allows the collection of energy from many sources and can give lower environmental impacts and improved security of supply.

Large Combustion Plant Directive (LCPD): In 2001 the EU issued the Large Combustion Plant Directive (LCPD) which was introduced to reduce carbon output. Under the LCPD most UK coal fired power stations are required to close in the next few years, and all affected stations by at least 2016.

National Grid: The National Grid is the high-voltage electric power transmission network in Great Britain, connecting power stations and major substations and ensuring that electricity generated anywhere in England, Scotland and Wales can be used to satisfy demand elsewhere.

Notification of Inadequate System Margin (NISM): This is a formal communication that lets market players know that National Grid's usual 'safety cushion' is not as big as they would like it to be at a particular time of that day.

Ofgem: The Office of Gas and Electricity Markets, supporting the Gas and Electricity Markets Authority (GEMA), is the government regulator for the electricity and downstream natural gas markets in Great Britain. It was formed by the merger of the Office of Electricity Regulation (OFFER) and Office of Gas Supply (Ofgas).

Short Term Operating Reserve (STOR): The National Grid's Short Term Operating Reserve (STOR) provides balance to the National Grid during unexpected periods of high demand for electricity or where there are constraints on electricity generation available in England and Wales.

Small Scale: This term relates to generation plant according to National Grid terminology. A 'small-scale' facility is one which is under 50MW of generation.

The Energy Act 2013: The Energy Act 2013 is the primary legislation that enables Electricity Market Reform (EMR), including the implementation of the Capacity Market (CM). The delivery of the EMR is a key objective of the Government's objective to secure energy on the way to a sustainable low carbon future. The government has established the CM and it is intended to incentivise investment in more sustainable, low-carbon electricity capacity at the least cost for energy consumers. This is needed to help secure electricity supplies for the future.