



Planning, Design and Access Statement
Gas Fuelled Capacity Mechanism Embedded
Generation Plan to support the National Grid

Land at Burghfield Road, Burghfield, Reading

Ref: ENSO/BU/1/2
March 2018

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Appendix 1 Technical considerations to connecting to the National Grid

Executive Summary

Enso Energy Limited (Enso) seeks planning permission to develop a small-scale, gas-fuelled, capacity mechanism embedded back up generation power plant to support the National Grid with electricity during peak demand. The application site comprises a total of 0.28ha of a field north of Burghfield village, located between the Burghfield substation and the Exeter to London railway line to the north and the Kennet and Avon Canal to the south. Of the 0.28ha the developed area would be only 0.26ha with the majority of the remainder being the access track to the road .

The proposed development is set behind a 2.4m security fence and a 4m high inner timber acoustic barrier. The generators are housed within soundproof containers which are based on standard shipping containers. Each container has an exhaust, coolers and radiators on top so that the total dimensions of the generators are 12m x 3m x 5m high with the exhaust pipe extending a further 2m.

The plant will run on average for 2,000 hours a year based on historical data and as projected by DECC (now DBEIS - Department of Business, Energy and Industrial Strategy). It is designed to cover peak periods of demand and is thereby known as a 'peaking station'. National Grid estimates that the network needs to double its standby peaking capacity by 2020 to avoid rolling blackouts. This application is made in response to that requirement.

The plant will not be used for base load operation. It will typically remain switched off, waiting for an instruction from the National Grid to power-up. The generators are connected in series and they start and synchronise with the local grid in around 30 seconds and then ramp up to full power in a further two minutes when called upon to do so.

This Planning, Design and Access Statement assesses the application against the policies contained within the development plan and provides a summary of the detailed environmental and technical assessments undertaken to support the application.

The site for proposed development finds the site suitable at this location because of the following:

- It is the only location in this area that both electrical and gas connection are viable.
- It is located over 120m from the nearest residential receptors.
- The site is bounded by transportation and energy supply infrastructure with nearby commercial development.
- Although located within Flood Zone 3 the development is designated as 'essential' and thus may be located within areas more prone to flooding.
- The site is lowlying with existing screening along its eastern boundary with Burghfield Road and would have limited impact on local views or visual amenity.

It is therefore concluded that the proposed development is acceptable in planning terms and meets the Government's objective to ensure that the UK continues to support the transition to a low carbon future with a secure and reliable supply of electricity.

It also delivers a significant local benefit in that it supports local communities and businesses, enhancing their energy security through the way the plant is connected. As an "embedded" or locally connected plant, within the local electrical grid network, the power is used locally first whenever there is demand for it. At times of strain in the grid, areas benefitting from local backup plants will generally be at the lowest risk of power outages and blackouts.

1. Introduction

Enso Energy Limited (Enso) is seeking to develop a small-scale power plant on 0.28ha of an agricultural field located on land south of Reading, between the Exeter to London railway line and Burghfield substation to the north, and the Kennet and Avon Canal to the south. This plant is proposed to be contracted to National Grid under Capacity Mechanism legislation. Such power plants form the central column of UK Government Energy Policy.

The aim of the legislation is to encourage the building of power stations that can provide electricity at the times it is most required, in the face of closure of most of the nation's coal-fired plant and increasing quantities of intermittent renewable generation.

The plant will be gas powered, which is very clean and over 40% efficient. This type of embedded generation serves to support the local power network. It is the most flexible type of generation as it can be turned on in 30 seconds exactly when needed and where required, which very few other forms of power generation can do.

Indeed, the only types of existing generating equipment that can provide this quick-start standby generation are old heavy-fuel-oil or diesel generators that are less efficient and have worse emissions profiles, or open cycle gas turbines that are again much less efficient (27-35%) and produce power in much larger blocks of 100MW or more. Neither of these options offers the distributed power solution that is the backbone of central-government policy in this area.

The applicant will be contracted to the system operator National Grid for a minimum of 15 years. The plant is designed to form part of the new generating capacity that will be needed to replace the old coal and nuclear plants as they come to the end of their operational lives. This requirement for new plant is now at a critical point, the following chart shows just how quickly the current capacity falls away (see Figure 1).

The proposed plant will run on average for 2,000 hours a year based on historical data and as projected by DECC (now DBEIS - Department of Business, Energy and Industrial Strategy). It is designed to cover peak periods of demand and is thereby known as a 'peaking station'. National Grid estimates that the network needs to double its standby peaking capacity by 2020 to avoid rolling blackouts. This application is made in response to that requirement.

2. The Need for this Development

Background and Overview

In 2001 the EU issued the Large Combustion Plant Directive (LCPD) which was designed to dramatically reduce our carbon output. Under the LCPD most of the older polluting coal power stations are now scheduled to close in the next few years. This, coupled with the planned closure of the existing nuclear fleet of power stations, as they reach the end of their active life, has created this very difficult scenario¹.

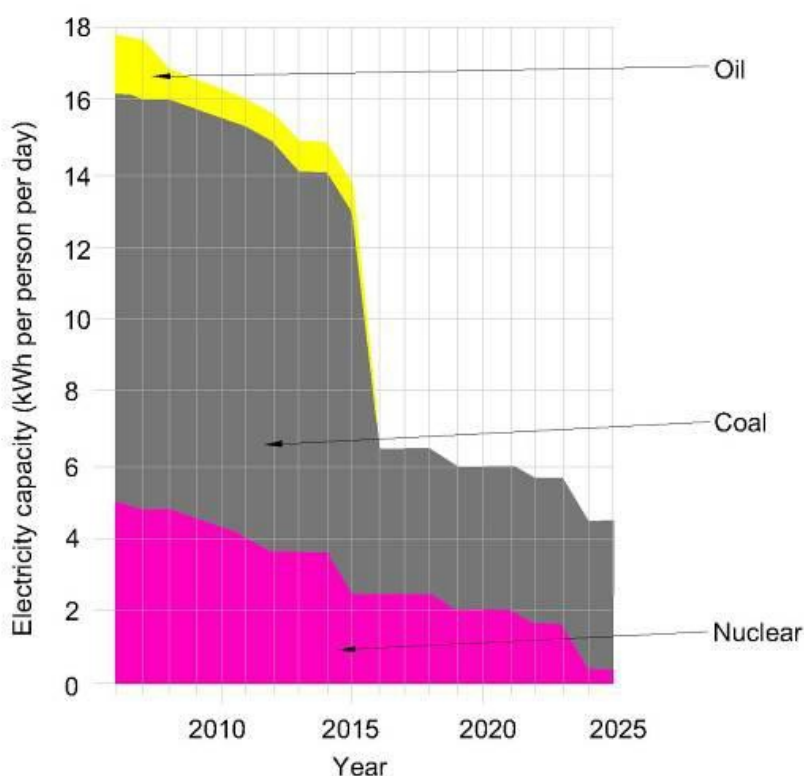


Figure 1 UK power station closures, as projected by energy company EDF

Wind power is set to provide a substantial element of our future power needs – however this type of power, by its very nature, is variable and needs to be supported. The replacement nuclear power stations are already well behind schedule.

To overcome these issues and to stimulate investment in the Energy Market the Energy Act 2013 sets out to establish a Capacity Market. In these auctions DBEIS determines the capacity of power generation the country requires. Typically there is a considerable shortfall between the projected demand and current supply. It is proposed by DBEIS that this shortfall will be made up by embedded distributed power generation including gas fired generating plant such as the one proposed within this application.

¹ The Large Combustion Plants Directive 2001/80/EC. October 2001

Capacity Shortfall

As set out above the UK power network is currently facing enormous issues with regards to power supply. Both Ofgem² and National Grid³ have been predicting power cuts from as early as 2014 with a real crisis point being reached in 2015 onwards. Whilst during the winters of 2015/16 and 2016/17, power cuts were avoided, this was in no small part due to the use of demand side measures whereby the National Grid arranged for energy intensive businesses to reduce their demand during peak times. As reported by the Centre for Policy Studies⁴, 12 GW of baseload capacity has closed since 2012 and UK winter margins are now at just 0.1% without emergency measures such as those referred to above.

Embedded Distributed Power (EDP) generation supplies power to the local distribution network at or near the point of use, i.e. where power is to be used and helps to support the network at times of peak demand, thus avoiding power fluctuations and blackouts. It does not waste the generated power in transmission losses that occur when power is transmitted over long distances. Nationally, transmission losses amount to between 8% and 14% depending on the region.

It is an important local advantage of this application that in the event of power shortages in the future anyone whose power is supplied locally will not suffer from blackouts experienced elsewhere as the proposed power plant will always be turned on to cover these shortages.

Local power where it is needed

If the blackouts that energy regulator Ofgem predicts do occur, then local communities and businesses will be able to make use of the applicant's power to keep going whilst others may be forced to shut down. This is because the applicant's plant is an 'embedded' power station on the local network. The power is used closest to the demand source first which means the closest neighbourhoods to the proposal benefit from improved energy security by being located near to such a facility.

Unlike most of the UK's Essential Infrastructure, the applicant's project does not involve huge smoke stacks, industrial sized plant and overhead cables on pylons. This is because the applicant provides small-scale back-up power where it is needed. All such new Capacity Mechanism power plants have already been designated as Essential Infrastructure by DBEIS and the National Grid.

² Ofgem Project Discovery: Energy markets scenario update. February 2010

³ National Grid: Operating the Electricity Transmission Systems in 2020. June 2009

⁴ Centre For Policy Studies: Economic Bulletin 84: Are We Heading For Blackout Britain, September 2016

3 The Proposed Development

The application site is shown edged red on the site location plan (1425_PL_02 Rev 6) which accompanies this application and which is presented here as Figure 2.

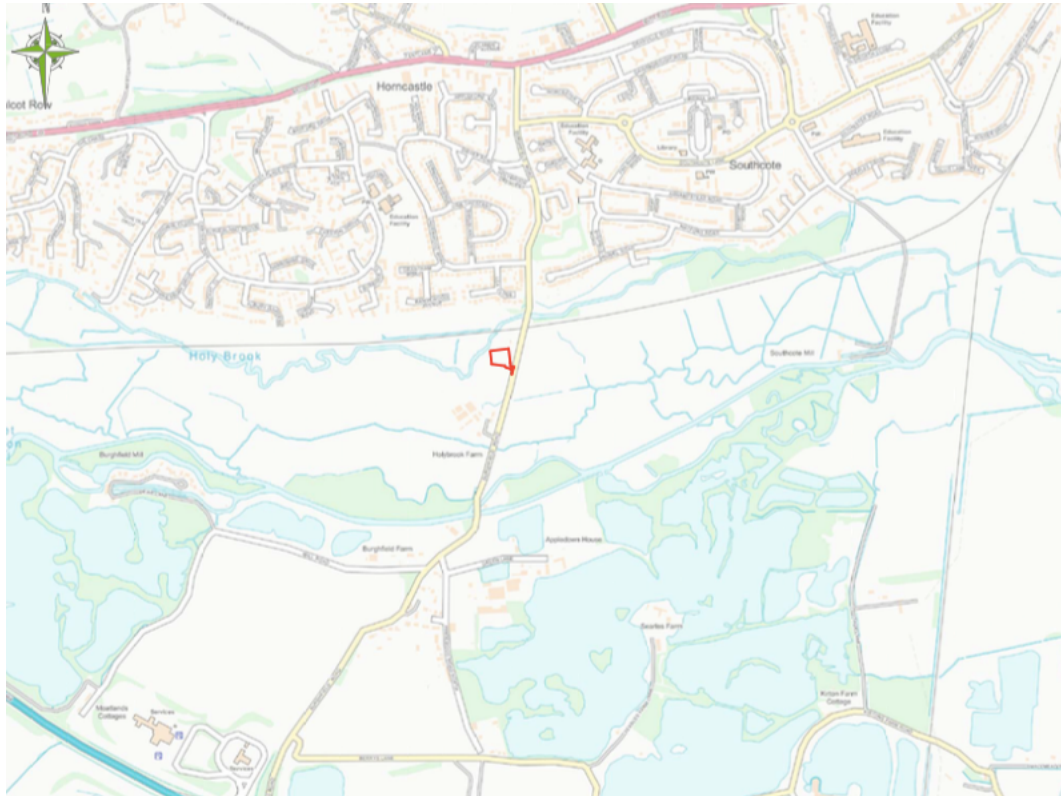


Figure 2 – Location Plan

The development is located at the southern boundary of the city and Unitary Authority of Reading within the County of Berkshire. The developed area would occupy 0.28 ha of a field, immediately to the north of which is the Burghfield substation and the Exeter to London railway line.

To the south of the site runs a series of pylons and overhead electricity cables, with Burghfield road to the east of the site connecting Reading with the village of Burghfield to the south. Between the site and the village of Burghfield lie the River Kennet and the Kennet and Avon Canal (400-500m to the south) and the M4 motorway and Reading Services lying approx. 1.2km south of the site. To the north of the site is the residential area of south Reading, separated from the site by Holy Brook (a tributary of the River Kennet) and the main railway line between Exeter and London. In the wider area is located AWE Burghfield a 225 acre site for the construction and decommissioning of nuclear warheads.

Access to the site is directly from Burghfield Road and uses the same access as the adjacent substation. From Burghfield Road, all deliveries would arrive from the north from the A4 which would connect to the M4 motorway at Junction 12.

4 Site Selection

Why here?

Enso has a national remit to find, build and operate sites for power generation and energy storage plant. Finding the sites in the first instance is one of the greatest challenges faced.

The applicant has identified in excess of 1,200 prospective sites nationally. After applying an initial planning filter for top-level planning constraints such as National Parks and AONBs, Conservation Areas and around 900 sites were left.

There are many technical limitations to the availability of sites that have the ability to connect to the electrical grid network, more so additionally to the gas network which is even more fragile and underinvested in than the electrical networks. Finding a point where both networks intersect is challenging and both are ultimately essential to a project of this nature; to ensure fuel and ability to export the power into the network. The specific grid and gas connections in the local area are considered in more detail below and in [Appendix 1](#) of this document.

Electricity connection constraints

If part of the network is operating at full capacity then no new generation can be connected into it so that whilst a site may appear to be appropriate for the proposed development, if the network has insufficient available capacity the site is rendered unsuitable.

The applicant has analysed fully, all the DNO networks across England and Wales and spoken to all of the DNOs to identify where their networks can accept embedded generation. This has been done in consultation with the local DNOs and National Grid's engineers and their asset management teams.

Of the sites located outside national/statutory designations, fewer than 100 were found to have a viable grid connection. The network in which the Burghfield substation is located is one of the very few places that a connection of an embedded power plant is practical and where the site has sufficient capacity to accept this generation.

Gas Connectivity constraints

Assessing the remaining sites further, approximately half had insufficient gas connectivity. This type of embedded generation scheme cannot connect to the low pressure network due to its high gas usage. If connected to the low pressure network, the gas supply to other customers would be taken up by the generator. The preferred connection is the Medium Pressure network (although connection can sometimes be made to Intermediate Pressure and High Pressure networks) and can only be made on a section of pipe which has sufficient capacity for the loads that are required.

The above process shows two things, firstly; that the approach to finding sites requires a significant volume of sites to consider as a starting point and, secondly; the site finding process is a lengthy, complicated and largely fruitless endeavour. As the need for new generation and power storage is so great, the sites that are left must be pursued as the only viable options.

Gas Constraints

This type of embedded generation scheme cannot connect to the low pressure network due to its high gas usage. If we were to connect to the low pressure network, the gas supply to other customers would be taken up by the generator.

The preferred connection is the Medium Pressure network, although connection can sometimes be made to Intermediate Pressure and High Pressure networks. Nevertheless, the gas network is very complex and due to variable tier pressure it is impossible to create a simplified formula to identify a suitable point of connection. Each network has a variable tier pressure and this is dependent on what is feeding off the pipe at particular locations.

Gas connections can only be made on a section of pipe which has sufficient capacity for the loads we require. As a general guide in terms of financial viability for a project of this scale, connection to medium pressure pipe must be secured within 2km of the development site to avoid any pressure drop.

Are there any alternative sites?

A connection for a project of this scale to both electricity and gas networks means that the area of search is severely restricted, particularly as the electrical connection is to a 66kV circuit and a Local Medium Pressure gas main. In this case whilst 2km from either connection on its own would potentially be possible (outer red circle in Figure 4,), the reality is that to be viable, the site would need to be located within approximately 1km of the gas and electric connections (inner red circle).

For the purposes of completeness, this section will consider sites within full 2km radius as illustrated in **Figure 3** below.

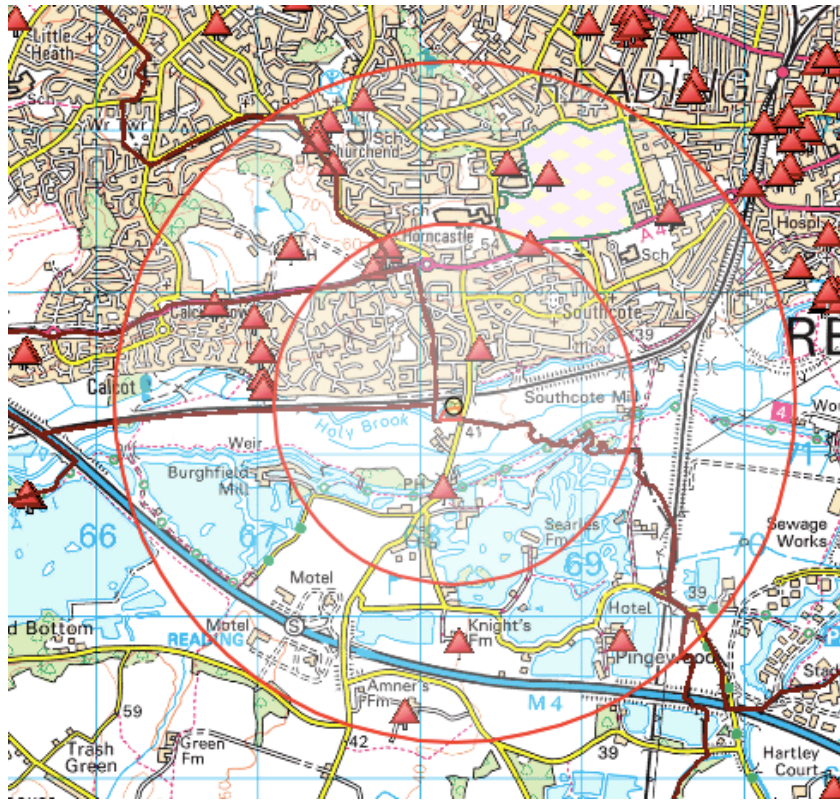


Figure 3 Site constraints map (data obtained from www.magic.gov.uk)

Physical Constraints

The 1km search area is dissected west to east by the main railway line between Exeter and London. The M4 Motorway runs west to south east through the 2km search area. Immediately to the north of the site is the Burghfield substation, with numerous lines of pylons and high voltage overhead lines alongside, and in the wider vicinity of this substation. There is also a telecommunications mast located between the substation and the proposed development site.

Much of the northern half of the search area is occupied by the residential suburbs of south Reading. The closest residential dwellings to the site are three detached properties 125-180m the south of the site along Burghfield Road and the properties on Lea Close 150m to the north which are separated from the site by the Exeter-London railway line. The settlement boundary for Reading lies along the southern boundary of this residential area to the north (as illustrated in **Figure 3** above), so that the site location falls outside of the LDF defined settlement area.

Nature Conservation Constraints

There are no nationally, internationally or locally designated sites of nature conservation importance within the search area, although the site is located within what is described within the 'Sites and Detailed Policies' document of the Reading Local Development Framework (LDF) as a '*Biodiversity Opportunity Area*' illustrated in **Figure**

4⁵. Much of the southern part of the search area is occupied by a series of interconnected lakes and ponds created as a result of the restoration of sand and gravel quarries. These ponds are now locally important sites for leisure and recreation and the area as a whole is a noted carp fishery.

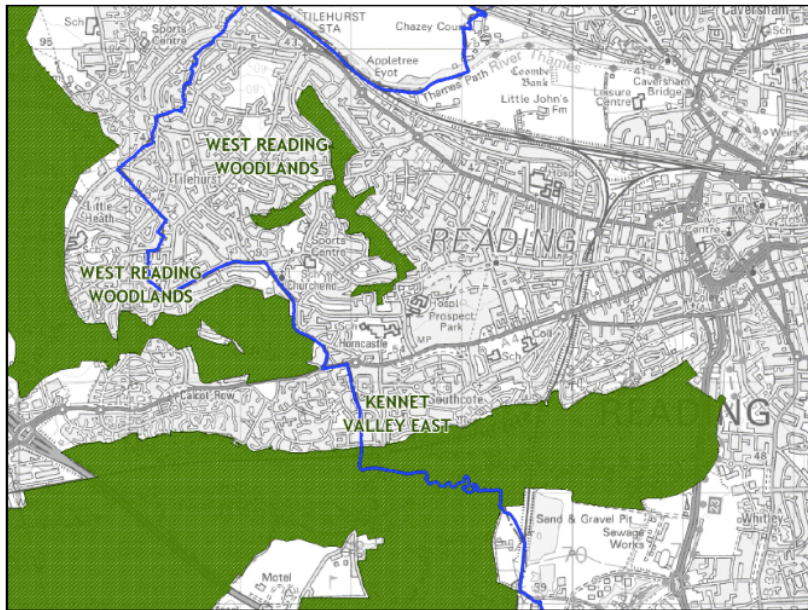


Figure 4: Biodiversity Opportunity Areas in Reading (Sites and Detailed Polices Document)

An Ecological assessment of the site has been undertaken (Clarkson Woods Ref: 5877F January 2018) and is submitted with this application. This identified that any potential loss would be to habitats of low ecological value. There would be potential disturbance to breeding birds, water voles and otter during construction and potential disturbance to bats during operation however this impact would be prevented by a range of mitigation measures and biodiversity benefits would occur due to a range of ecological enhancement measures which are proposed.

Heritage Constraints

There are a number of heritage assets in the vicinity of the site including Listed Buildings (the closest being the Grade II listed 'Southcote and Garden Walls 331m to the north) and the Grade II Prospect Park (Registered Park and Garden) 900m to the northwest. The site is also located within an area identified within the LDF as an 'Area of Archaeological Potential' illustrated within **Figure 6** below, taken from the LDF Proposals Map.

A desk-based archaeological assessment has been undertaken and accompanies this planning application (Wyvern Heritage and Landscape: Desk Based Archaeological Assessment: Burghfield Road, February 2018). This assessment established the following:

- there are no known designated heritage assets within the site;

⁵ Within the Proposals Map that accompanies the Draft Pre-submission Local Plan, the site is excluded from the Biodiversity Opportunity Area

- there is no impact on the setting of designated heritage assets including Listed Buildings, Registered Historic Parks and Gardens, Conservation Areas and Scheduled Ancient Monuments and no impact on the setting of undesignated heritage assets;
- there are no undesignated heritage assets within the development site and no archaeological features or finds recorded
- that based on current evidence there is a low potential for the presence of any unrecorded significant undesignated buried heritage assets and a low potential for any form of pre Post Medieval archaeology in this location.
- That the potential impact of the development on archaeology is also low due to the minimal below ground work required

Air Quality Constraints

Within the settlement boundary of the city an Air Quality Management Area (AQMA) has been declared along the main arterial roads in and out of Reading; the closest of these roads to the site is Bath Road approximately 900m to the north of the site. The boundaries of the AQMA associated with Bath Road are shown in **Figure 5**, taken from the Reading LDF Proposals Map.

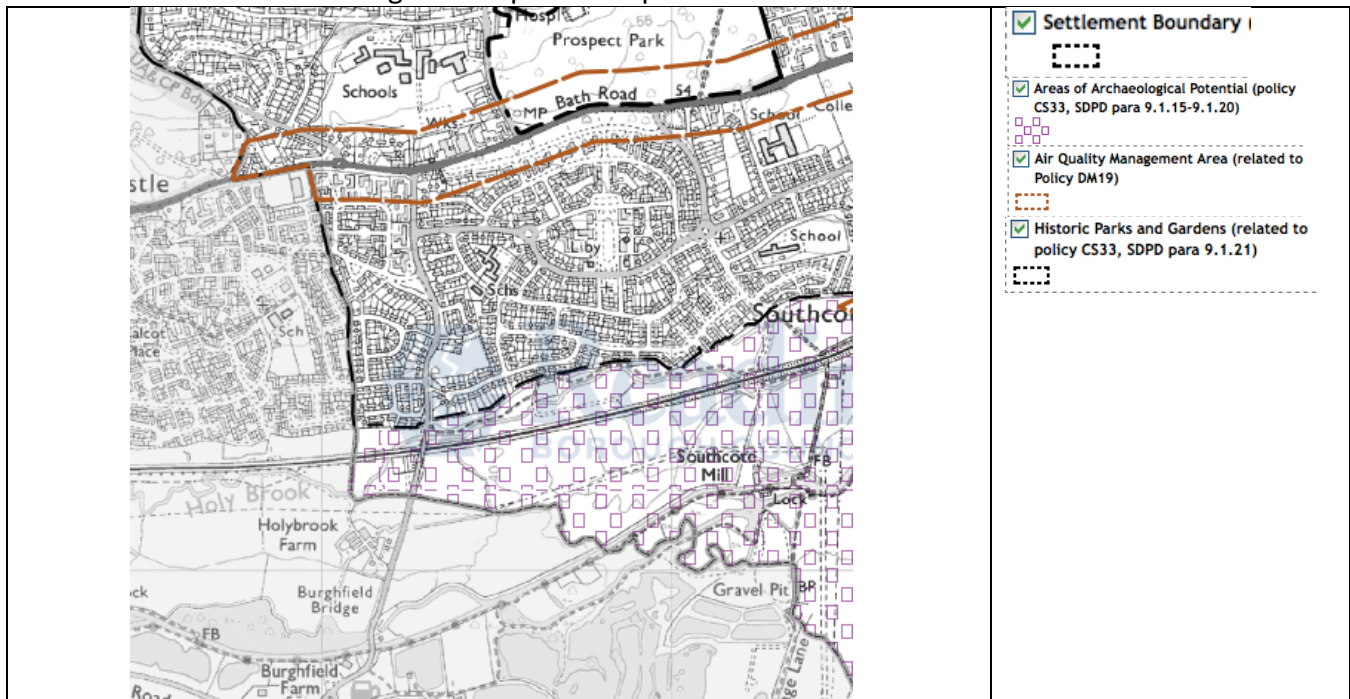


Figure 5 Extract from the Reading Local Development Framework Proposals Map

Landscape Constraints

The site is not located within or in the vicinity of any Areas of Outstanding Natural Beauty (AONB), the closest being the Chilterns AONB 3km to the west, separated from the site by the city of Reading. The site does lie within a locally designated 'Major Landscape Feature' as illustrated in **Figure 6**, also taken from the LDF

Proposals Map.

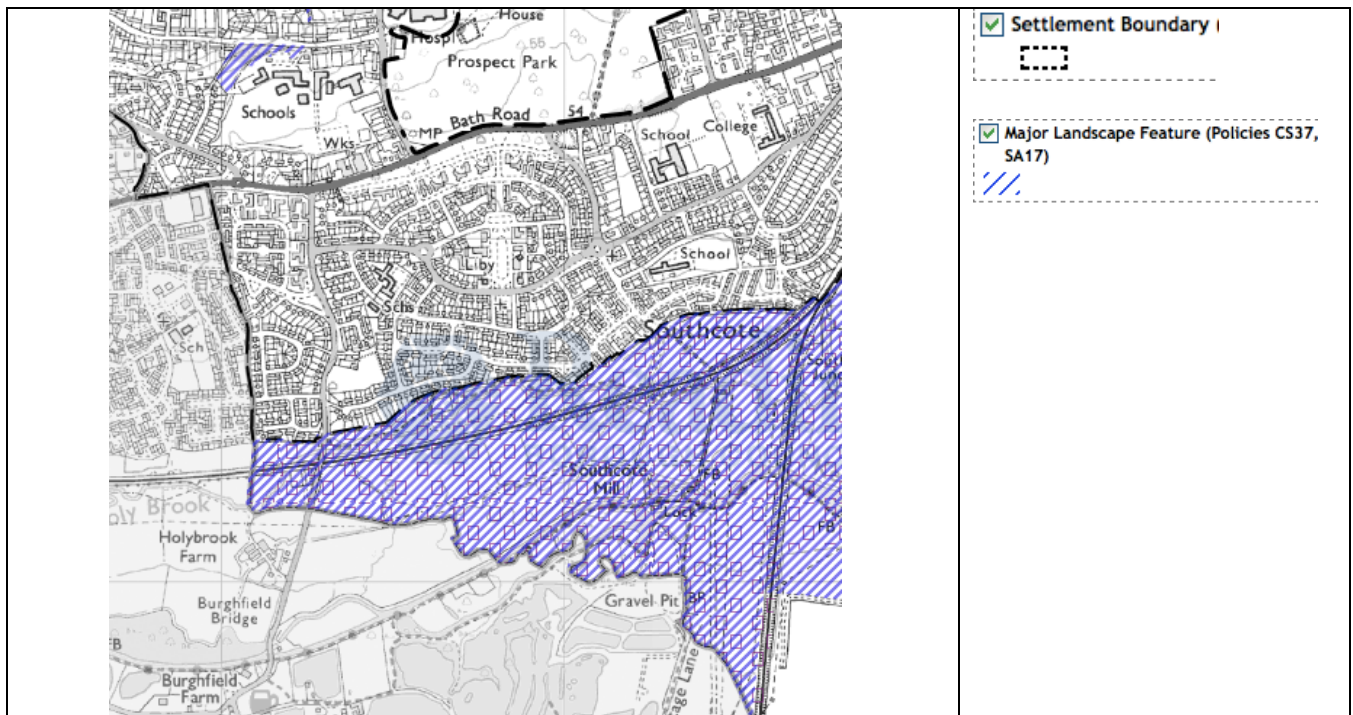


Figure 6: Second extract from the Reading Local Development Framework Proposals Map

Flood Risk

The site, along with a wide area to the south of Reading is located within an area identified by the Environment Agency Flood Map as being in Flood Zone 3 i.e. being at the greatest risk of flooding. This is illustrated in **Figure 7** which is an extract from the online Environment Agency Flood Map for Planning.

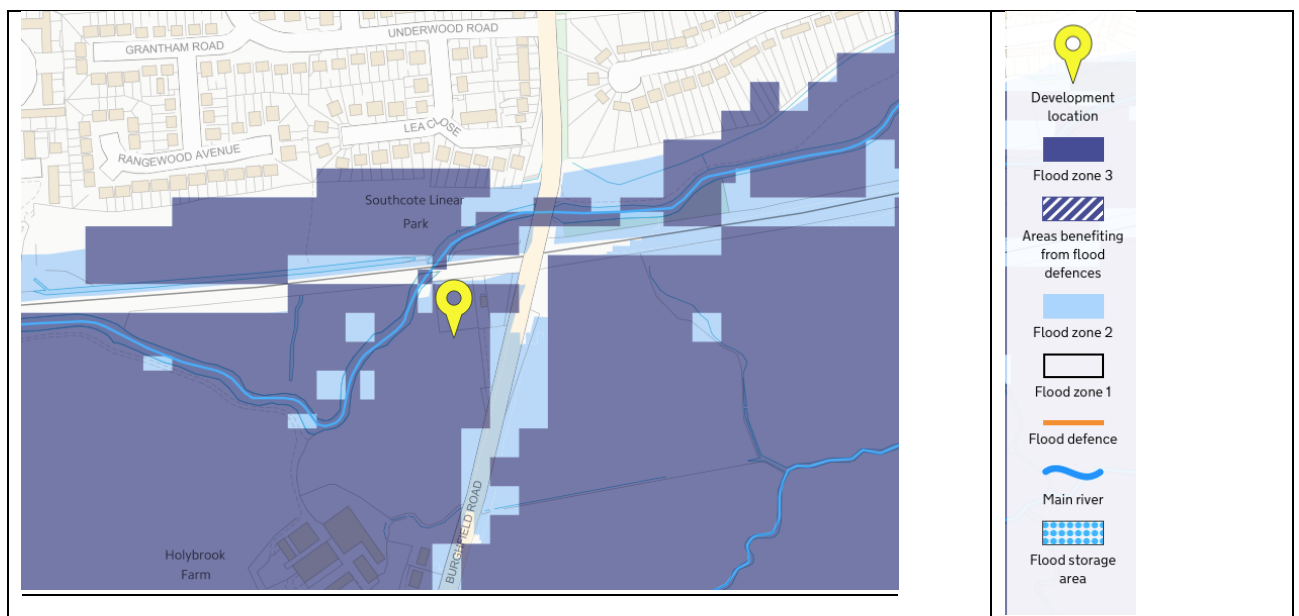


Figure 7 Environment Agency Flood Map

As an electricity generating power station, the proposed development is classified as 'essential utility infrastructure' and may potentially be located within Flood zones 3a and 3b subject to criteria as follows⁶.

In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- *remain operational and safe for users in times of flood;*
- *result in no net loss of floodplain storage;*
- *not impede water flows and not increase flood risk elsewhere*

The Reading Borough Council Strategic Flood Risk Assessment (March 2009) indicates that the site falls within Flood Zone 3b (functional floodplain) (illustrated in **Figure 8**). It can be seen that the whole of the area within the search area that falls within Reading Borough Council area and is not occupied by residential housing falls within Flood Zone 3a.

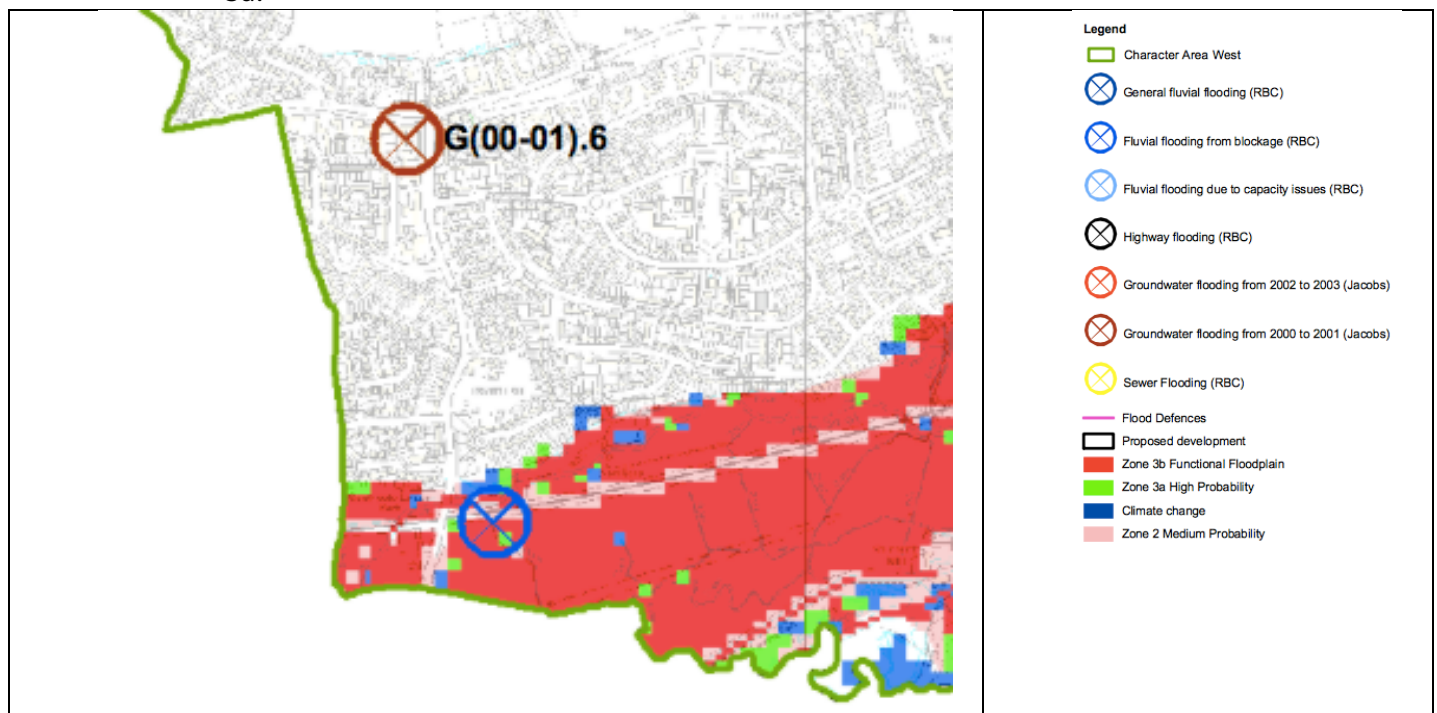


Figure 8: Extract from Reading Borough Council Strategic Flood Risk Assessment

Similarly the Strategic Flood Risk Assessment for West Berkshire Council, identifies the

⁶ Table 3: Flood risk vulnerability and flood zone 'compatibility', 'Flood Risk and Coastal Change' Planning Practice Guidance March 2014

area to the south of the site also as Flood Zone 3b, however no extract from this plan is provided due to the poor image resolution when zoomed in to close range.

As required by NPPF (2012) a sequential test has been undertaken for this development which has identified that there are currently no reasonably available sites for the development within the 2km search area in Flood Zones 1, 2 or 3a and the site has passed the sequential test. The nature of the proposed development means that it is classified as 'essential infrastructure' and is permitted development within Flood Zone 3b provided that it is designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

The Flood Risk Assessment that accompanies this application (Ref: WB04735-FR01 21/02/2018) demonstrates that:

- the site is appropriate for development and that flood risk to the proposal is acceptable when the proposed mitigation measures are in place. I
- surface water runoff from the site can be managed in a sustainable way, in accordance with NPPF and best practice.
- flood risk on site can be managed without either risk on site or increasing flood risk elsewhere within the catchment.
- the site can be developed without adversely impacting existing surface water runoff.

Proximity to sensitive receptors

A key issue for consideration when selecting appropriate sites for this type of development is proximity to sensitive receptors, particularly nearby areas of housing that could experience perceived or real 'bad neighbour issues' associated with the emissions and noise, albeit, at relatively low levels. Approximately half of the search area is high density residential urban areas. As described the closest residential properties to the development lie between 120-180m from the site. At this distance, given the mitigation measures proposed, the potential for the proposed development to have an adverse impact on residential amenity is limited.

Summary

It can be seen that the combination of physical and policy constraints limit the available areas within the study areas suitable for this type of development. The proposed site is located in an area outside of densely populated residential areas and in the vicinity of major linear transportation and electricity infrastructure. Whilst located within Flood Zone 3 it is one of the very few types of development that can be acceptable within FZ3. Accordingly, it is concluded that the chosen site is the best option for development.

5 Design and Access

Access

Access to the site is directly from Burghfield Road and uses the same access as the adjacent substation. From Burghfield Lane, all deliveries would arrive from the north from the A4 which would connect to the M4 motorway at Junction 12.

Once operational the number of vehicle movements to and from the site is restricted to the visiting engineers and service contractors. The site would be visited daily by the engineers.

Access and Circulation - Construction Phase

The construction period is split into three phases; civil works, delivery of equipment and electrical works. The overall construction period will take between eight and 10 months.

The civils element will take approximately six months with daily deliveries of material and plant.

The delivery of the equipment will take approximately two weeks. This will involve delivering the generators, transformers and electrical switchgear cabins. To put these into position will require a large crane. This will be carefully planned with a haulage company to ensure that it does not affect the local road network.

The remaining eight weeks will require all the equipment to be electrically connected together and for the gas supply to be fed to each generator. Once the contractors are on site in the morning, they tend not to leave until the end of the day. Given the size of the site daily traffic movements are therefore quite low.

All construction personnel and deliveries will park on site and leave the site in a forward gear.

Access and Circulation - Operational Phase

The generation compound is largely unmanned and will be operated remotely from the operator's headquarters.

The site engineers will be recruited locally as it is a requirement that the plant can be attended within 20 minutes, 24 hours a day. These four site engineers will operate on a rota and will therefore need to be located in close proximity to the proposed development.

Under normal operations the numbers of vehicle movements to and from the site are restricted to the visiting engineer on a daily basis and service contractors during maintenance periods.

The additional traffic movements associated with the site will be negligible and impacts on the local road network will be kept to a minimum.

Amount

The development is located in an area to the south of the railway line between Exeter and London and west of Burghfield Road within an area of a field predominantly of grassland and scrub.

The proposed layout for the site is illustrated in **Figure 9** and presented within Drawing 1425-PL-01 Rev06. The compound is designed with an internal driveway. This allows for service engineers to get near to the containers. The generators are spaced out equally to allow for maintenance access and for airflow circulation to allow for efficient operation.

The internal compound will have an internal tarmac drive, concrete slabs for the generators and the rest will be laid to gravel. This will create a blanket soakaway which will avoid any run-off.

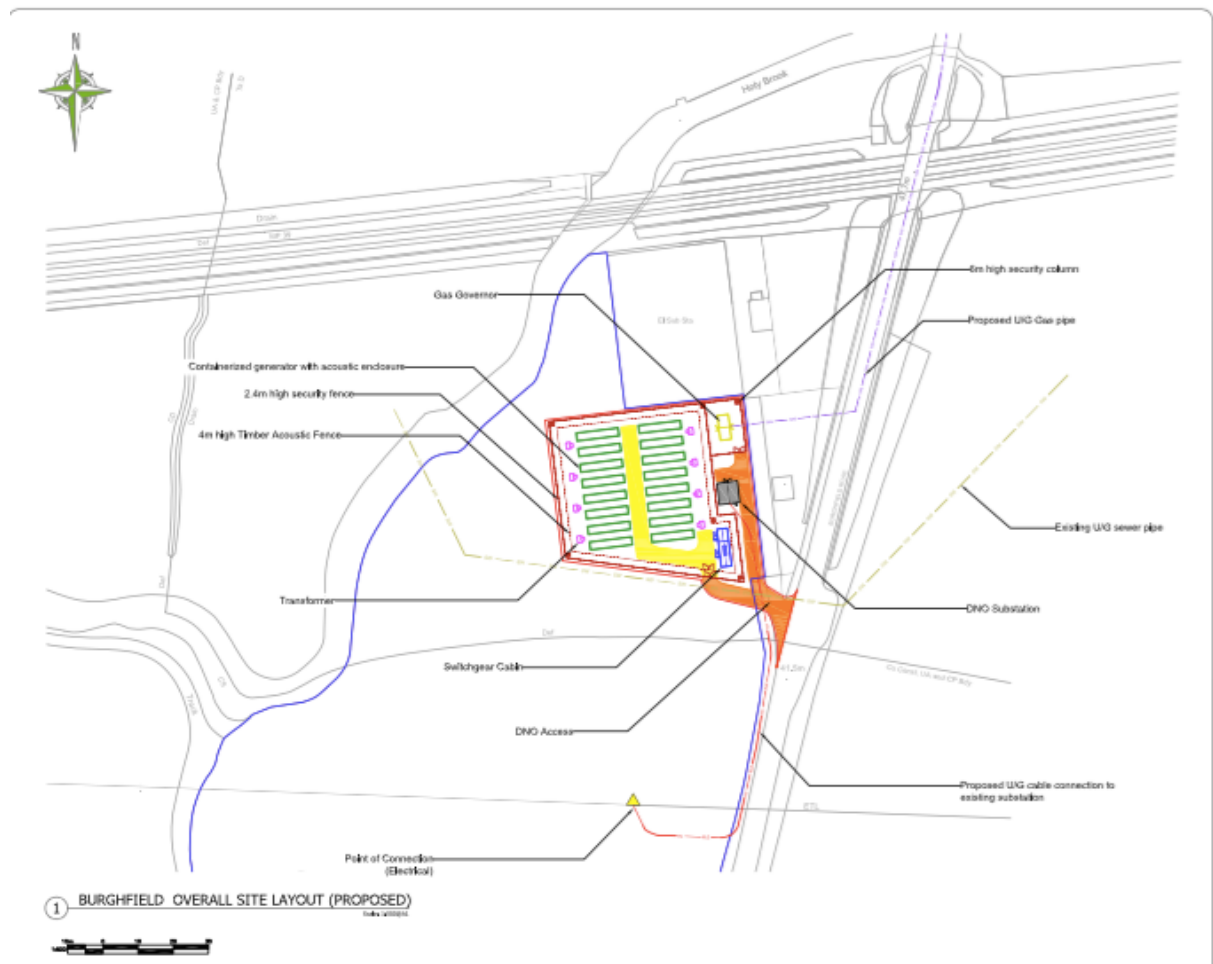


Figure 9 Site layout

The development is surrounded by a secure 2.4m wire mesh security fence within which is a 4m timber sound barrier illustrated here as **Figure 11**.



Figure 10 Illustration of acoustic barrier

Within this fence are 20 containerised generation units based on standard shipping containers; each unit contains one generator. Each container has an exhaust, coolers and radiators on top so that the total dimensions of the generators are 12m x 3m x 5m high with the exhaust pipe extending a further 2m. These containers are designed to house the units securely and to protect them from the elements. They are purpose built and have been designed to minimise any noise from the plant when operational. An example of the type of generator that may be used is presented in **Figure 12**.



Figure 11 Typical Containerized generator

Landscaping

The site would occupy an area of land currently used for storage of plant and machinery from which some of the topsoil has been removed and piled into mounds. To the north of the site lies the Exeter to London railway line along which are bands of trees and vegetation which would screen the development from views from the residential area to the north. A band of mature trees also lies along much of the eastern and western site boundaries, between the application site and Holy Brook to the west and between the site and Burghfield Road to the east; the road itself is on an embankment at this point where it crosses the railway line. As such wider views of the site from the east would also be limited.

The site is likely to be clearly visible in near views from the south and southwest of the site within the fields immediately adjacent however no public rights of way cross these fields, to the numbers of sensitive visual receptors affected would be minimal. Furthermore views of the application site from the farmhouse at Holybrook Farm and also from the two dwellings to the south are likely to be limited due to intervening vegetation and farm buildings. As such the change to views and overall impact of this change would be limited.

Security

Due to the nature of this type of development, community safety is of utmost importance. Consequently, embedded generation plants tend to be in areas that are not immediately adjacent to residential properties.

The development is sited behind a 2.4m high metal security fence with the appropriate signage to adhere to HSE regulations.

An Alarm Receiving Company (ARC) is appointed to ensure that no one enters the site and to ensure community safety is maintained. They will monitor the site 24/7 and raise any necessary alarms with the local police.

Scale

The layout of the compound is shown on 1425_PL_01 Rev 2 and the dimensions of each element of indicated on the standard detail drawings that are contained within the application documents.

The perimeter security fence is 2.4m and is galvanised wire mesh to confirm with the security specification.

An inner acoustic barrier of 4m in height is constructed to screen the equipment inside and also to provide an additional acoustic barrier. The acoustic barriers give an additional 9dbA reduction.

Appearance

As described above the application site is enclosed by a 2.4m security fence and additional a 4m high, timber acoustic barrier, illustrated in **Figure 11**.

- 4.24 The containers are painted in a cream colour (**Figure 12**), the transformers are in a dark grey finish (**Figure 13**) and the welfare and switchgear cabins are finished in green (**Figure 14**). The illustrations below give you an example of this.



Figure 12: Switchroom



Figure 13: Transformer

Noise and Air Quality

A standard 20MW electrical generation gas peaking plant similar to this, based on a typical spark ignition reciprocating gas engine would need to comply with the emission limit values given within the Medium Combustion Plant Directive (EU2015/2193). These emission limit values are 95 mg/Nm³ for oxides of nitrogen (NOx). Emissions of carbon monoxide (CO), particulate matter (PM10 and PM2.5) and sulphur dioxide will be low, if present at all. The emissions of NOx, based on the limit value given above, from a typical 1.3MW electrical export generator would be 0.29 g/s. The annual emission of NOx will be around 1.6 tonnes of NOx per year per engine. For a 20MW electrical generation power station, this is equivalent to ~0.002% of the total NOx emitted from the UK power sector.

Ultimately, under the terms of the Capacity Market, which these plants are designed for, each plant is contracted and obliged to be available to operate and provide power at any time that National Grid may call for it, however the majority of the operation is over the winter and between the morning and evening peak hours.. The operational hours per year will vary as the engines may operate for a few minutes only in some cases up to a few hours depending on the requirements from the National Grid in each instance. Therefore, the plant may only operate for very short periods at times.

An assessment of the potential long term and short-term worst case air quality effects on nearby receptors has been undertaken and the report submitted as part of this planning application (Sol Environmental Ref: SOL1801EE01_Air February 2018). This has concluded that the impact of the proposed development on human health and sensitive habitat sites would not be significant.

The generator sets are housed within bespoke acoustic containers. The containers are louvered enclosures which maintain the air flow needed by the equipment by way of directly mounted fans that draw air through the containers. The air intake and outflow is through a sound baffle which reduces the sound of the engines. A 4m high inner acoustic fence absorbs the noise and helps reduce the sound by a further 9dbA.

An assessment of the potential noise effects of the proposed development has been undertaken and the report is submitted as part of this planning application (Sol Environmental Ref: SOL1801EE01_03 NOISE March 2018).

The assessment has identified that the impact of the scheme at the nearest residential receptor to the south would result in limited noise effects. Furthermore, the predicted noise levels at the nearest residential properties from the Generator site are below the lower guideline noise level for outdoor living areas and it is considered that no additional noise mitigation measures are required.

6 Planning Policy

6.1 National Policy

Planning Act 2008 Part 3 Section 15

This section of the Act sets the application outside that Act as the proposed application of 20MW is below the 50MW threshold.

Section 15 of the 2008 Act - Generating Stations - states:-

(1) The construction or extension of a generating station is within section 14(1) (a) only if the generating station is or (when constructed or extended) is expected to be within subsection (2) or (3). A generating station is within this subsection if—

- (a) It is in England or Wales,*
- (b) It is not an offshore generating station, and*
- (c) Its capacity is more than 50 megawatts.*

National Planning Policy Framework – Department for Communities and Local Government – March 2012

The National Planning Policy Framework (NPPF) sets out H M Governments macro planning strategy for England. In this document there are set out a number of overarching policies at paragraph 17 - the core planning principles - within which, a number are relevant to this application and are restated below.

Core planning principles

Within the overarching roles that the planning system ought to play, a set of core land-use planning principles should underpin both plan-making and decision-taking. These 12 principles are that planning should:

(Relevant extracts of the 12 principles are given below)

- *Pro-actively drive and support sustainable economic development to deliver the homes, business and industrial units, **infrastructure** and thriving local places that the country needs.*
- *encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value;*

To help achieve economic growth, local planning authorities should plan proactively to meet the development needs of business and support an economy fit for the 21st

*century. Investment in business should not be over-burdened by the combined requirements of planning policy expectations. Planning policies should recognise and seek to address potential barriers to investment, including a poor environment or any **lack of infrastructure, services or housing. (our emphasis)***

Meeting the challenge of climate change, flooding and coastal change

Paragraph 97 of the NPPF promotes the use of decentralised energy:

- *To help increase the use and supply of renewable and low carbon energy, local planning authorities should recognise the responsibility on all communities to contribute to energy generation from renewable or low carbon sources. They should:*
- *identify opportunities where **development can draw its energy supply from decentralised**, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.*

Paragraph 98 adds:

When determining planning applications, local planning authorities should:

- ***not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions;***
- ***Approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should also expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.***

As set out above, this proposal is helping to deliver on the stated aims of an increasingly decentralised national energy supply whilst helping to reduce emissions from dirtier forms of energy that it is replacing such as coal.

Overarching National Policy Statement for Energy (EN-1)

Paragraph 3 of the NPPF states that “*National policy statements form part of the overall framework of national planning policy, and are a material consideration in decisions on planning applications.*” As such the Overarching National Policy Statement for Energy (EN-1) is a material consideration which must be taken into account in the determination of this planning application.

Paragraph 2.2.20 of EN-1 states; *“It is critical that the UK continues to have secure and reliable supplies of electricity as we make the transition to a low carbon economy. To manage the risks to achieving security of supply we need sufficient electricity capacity (including a greater proportion of low carbon generation) to meet demand at all times. Electricity cannot be stored so demand for it must be simultaneously and continuously met by its supply. This requires a safety margin of spare capacity to accommodate unforeseen fluctuations in supply or demand.”*

Paragraph 3.3.29 of EN-1 supports the development of decentralised electricity generation facilities: *“The Government would like to see decentralised and community energy systems such as microgeneration make a much greater contribution to our targets on reducing carbon emissions and increasing energy security from current levels of these systems. These technologies could lead to some reduction in demand on the main generation and transmission system.”*

EN-1 recognises that a flexible approach to energy generation is required to provide backup supply for intermittent renewable energy. Paragraph 3.3.11 states; *“...the more renewable generating capacity we have the more generation capacity we will require overall, to provide back-up at times when the availability of intermittent renewable sources is low. If fossil fuel plant remains the most cost-effective means of providing such back-up, particularly at short notice, it is possible that even when the UK’s electricity supply is almost entirely decarbonised we may still need fossil fuel power stations for short periods when renewable output is too low to meet demand, for example when there is little wind.”*

Paragraph 3.6.1 continues to state that; *“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 operated, in line with increasingly demanding climate change goals.”*

EN-1 recognises that the increasing reliance on renewable energy sources with Paragraph 3.3.12 stating that *“we need more total electricity capacity than we have now, with a larger proportion being built only or mainly to perform back-up functions.”*

Ministerial Statement

On 18 November 2015, the Secretary of State for Energy and Climate set out a new direction for UK energy policy. Within this the need for energy security was emphasised and in particular relation to these proposals the Governments approach to innovation was set out; *“Government’s first job is to create the environment for new ideas to flourish by getting rid of the barriers that in the way. Some argue we should adapt our traditional model dominated by large power stations and go for a new, decentralised, flexible approach”.*

“Locally-generated energy supported by storage, interconnection and demand response, offers the possibility of a radically different model.”

On 1 March 2016 a further announcement was made by the Secretary of State for Energy and Climate Change, which set out a series of changes to the Capacity Market to improve energy security for families and businesses. This statement made clear that through; *“buying more capacity earlier we will protect consumers and businesses from avoidable spikes in energy costs.”* Within the statement it was also made clear that; *“We’re also sending a clear signal to investors that will encourage the secure and clean energy sources we need to come forward – such as gas and interconnectors – as part of our long-term plan to build a system of energy infrastructure fit for the 21st century.”*⁷

On 3 March 2016, the Energy and Climate Change Committee published a report on investor confidence. This sets out the Government’s plans to secure investment in clean, secure and affordable energy. This again highlights the clear policy direction to deliver a long-term plan which includes an emphasis on gas and interconnectors playing a key role in the energy infrastructure mix.⁸

Previous Appeal Decisions

This type of development is recognised as part of the move within the country towards renewable and low carbon energy. In a recent appeal decision (ref APP/R1010/W/17/3172633) the inspector noted that gas peaking plants have been found to be *“part of the renewable energy infrastructure being developed to meet the UK’s obligations under the EU Renewable Energy Directive, because renewable sources are supplies that are dependent on the time of day and weather conditions.”* A copy of this appeal is provided with the planning application.

6.2 Local Planning Policy

Within Reading, local planning policy is provided by the following documents:

- The Core Strategy (adopted 2008, with alterations adopted 2015),
- The Reading Central Area Action Plan (adopted 2009)
- The Sites and Detailed Policies document (adopted 2012 with alterations adopted 2015) of the Reading Borough Local Development Framework.

The policies most relevant to this application are set out below:

Core Strategy

- Cross Cutting Policy – Living with Environmental Limits
- CS1 Sustainable Construction and Design

⁷ <https://www.gov.uk/government/news/reforms-to-capacity-market-to-improve-energy-security-for-familiesand-Businesses>

⁸ <https://www.gov.uk/government/news/what-the-government-is-doing-to-secure-investment-in-clean-secureand-affordable-energy--2>

- CS6 Settlement Boundary
- CS7 Design and the Public Realm
- CS8 Waterspaces
- CS33 Protection and Enhancement of the Historic Environment
- CS34 Pollution and Water Resources
- CS36 Biodiversity and Geodiversity
- CS37 Major Landscape Features and Strategic Open Space

Sites and Detailed Policies

- SD1 Presumption in Favour of Sustainable Development
- DM1 Adaptation to Climate Change
- DM4 Safeguarding Amenity
- DM17 Green Network
- DM19 Air Quality
- SA16 Public and Strategic Open Space
- SA17 Major Landscape Features

The new Reading Local Plan is currently in preparation with the Pre-Submission Draft Local Plan recently consulted upon. This document has gone through some consultation but is still at a relatively early stage in preparation which would be reflected in the weight given to these policies.

There are other plan documents currently in preparation including the Central and Eastern Berkshire Minerals and Waste Plan; however this is at an early stage of preparation with the consultation for the Issues and Options report undertaken in Summer 2017.

The Council has a number of Supplementary Planning Documents (SPD); of these the most relevant is the Sustainable Design and Construction SPD (adopted July 2011).

CS1 Sustainable Construction and Design

This policy states that new development will be required to ensure that the use of energy, water, minerals and other natural resources are used appropriately and efficiently and take account of the effects of climate change. These include the incorporation of sustainable urban drainage techniques.

As previously described, the proposed development will address drainage sustainably as it will be predominantly laid to gravel which will create a blanket soakaway which will avoid any run-off. The development would also take account of the effects of climate change as its function is to support the National Grid with the greater expansion of renewable energy generation thus contributing to the UK's efforts to decrease CO₂ emissions.

Policy CS6 Settlement boundary

This policy states that no development will be permitted outside the settlement boundary as defined on the Proposals Map. The proposed development does fall outside the settlement boundary defined in the adopted Proposals map and on the face of it would appear to be contrary to Policy CS6.

The reasoned justification however suggests that settlement boundaries may be less applicable in the future and indeed the Pre-submission Draft Local Plan does not include a settlement boundary within the Proposals map nor is there a policy that references settlement boundaries within that document. As such, whilst the proposed development is contrary to Policy CS6, it is not contrary to the emerging Local Plan (which carries some weight and shows the Council's planned policy direction) on this basis. This and other material considerations already described that demonstrate the need for the development, and the fact that the impacts of the development are limited and not unacceptable, presents a material consideration of sufficient weight to permit this development in spite of conflict with Policy CS6.

Policy CS7 Design and the Public Realm

This policy relates to design standards for development to maintain and enhance the character and appearance of its area, with particular focus on the layout, landscape, density and mix of development, scale (height and massing) and Architectural detail and materials.

The proposed development is for energy generation and has a similar style design to the adjacent substation. No additional screening is provided, there is existing screening surrounding the site, also the site is not located in an area of particular landscape value, there are few sensitive visual receptors in the vicinity of the site, and the site would be seen in the context of other energy infrastructure. As such no conflict with Policy CS7 would occur.

Policy CS8 Waterspaces

This policy seeks to protect the main waterspaces of Reading, namely the Rivers Thames and Kennet and the Holy Brook so that they can continue to contribute to local and regional biodiversity and ecology, local character and visual amenity and provision of accessible leisure and recreation opportunities.

The proposed development is located alongside the Holy Brook, adjacent to the Burghfield Substation and the Exeter to London railway line. No chemicals would be stored on site, and no impact to the water quality of the Holy Brook from the operation of the site would occur. The construction process would be undertaken in line with relevant Environment Agency and CIRIA guidelines⁹ and can be controlled by condition.

The proposed development is for energy generation and has a similar style design to the adjacent substation. Whilst no additional screening is provided, there is existing

⁹ CIRIA Report C532 Control of Pollution from Construction Sites

screening between the site and the Holy Brook and there are limited opportunities for sensitive receptors to use the Brook at this location given the lack of PROWs in the area. As such, no adverse effect on the Holy Brook would occur.

The application site is approximately 500m from the River Kennet and Kennet and Avon Canal. However the local topography and existing screening are such that no visual impact on the users of the canal would occur as a result of the development.

As such, it can be seen that the proposed development would not conflict with Policy CS8.

CS33 Protection and Enhancement of the Historic Environment

This policy states that historic features and areas of historic importance will be protected and where appropriate enhanced including (*inter alia*) locally designated features of archaeological importance. The policy goes on to state that planning permission will only be granted where development has no adverse impact on historic assets and their settings, and that proposals will be expected to protect the character and appearance of the area in which they are located.

The site is located within a locally designated Area of Archaeological Potential. Minimal groundworks would be required as the generators and other plant will be sited on concrete slabs, with the remainder of the site laid to gravel. An Archaeological Assessment accompanies this application which demonstrates that no adverse effect on heritage assets would occur. As such, no conflict with Policy CS33 would occur.

CS34 Pollution and Water Resources

This policy states that development will only be permitted where it would not be damaging to the environment through air, land, noise or light pollution and; preserve water quality; and where existing sewerage would be sufficient to accommodate the development..

With regard to sewerage at the site, any welfare facilities such as portacabins and standard, self-contained portaloos used during construction, will be removed from the site at the end of the short construction period. During its operation, the site will be manned on a part-time basis by an engineer who will visit the site once every day. Foul waste discharge rates will be minor and will be managed via discharge to a below ground effluent tank located beneath a proposed site welfare cabin. The tank will be emptied by tanker when it is full. A fill sensor will be fitted to the tank to alert the engineers when capacity is nearly reached.

The proposed development is located alongside the Holy Brook, adjacent to the Burghfield Substation and the Exeter to London railway line. No chemicals would be stored on site, and no impact to the water quality of the Holy Brook from the operation of the site would occur. The construction process would be undertaken in line with

relevant Environment Agency and CIRIA guidelines¹⁰ and can be controlled by condition. A Construction and Site Management Plan will be adhered to during the construction, operation and decommissioning phases of the proposed development. As such, best practice procedures and technologies would be observed during all phases.

The site is not located in a particularly tranquil area, being located adjacent to the Exeter to London railway line and in the vicinity of the M4 motorway. The generators would be in operation for short periods of time only and noise that would potentially be experienced, in addition to the noise from the railway line and motorway, would be reduced by the presence of the 4m acoustic fence. As such no unacceptable adverse impact on neighbourhood amenity resulting from noise would occur and the proposed development would not be contrary to Policy CS34.

This policy states that planning permission will not be permitted for development in an area identified as being at high risk of flooding, where development would reduce the capacity of the flood plain to store floodwater, impede the flow of floodwater or in any way increase the risks to life and property arising from flooding.

The proposed development is located in Flood Zone 3b i.e. at high risk of flooding. However as it is for the purpose of generating electricity the development is deemed to be 'essential infrastructure'. The application is accompanied by a Flood Risk Assessment which demonstrates that the proposed development would not have an adverse effect to the surrounding land or property from flooding. As such no conflict with this policy will occur.

Policy CS36 Biodiversity and Geodiversity

This policy states that development should retain, protect and incorporate features of biodiversity interest and that on sites with recognised biodiversity value, development will not be permitted where there would be direct or indirect adverse impact unless it can be demonstrate that the need for the development clearly outweighs the need to protect the site and appropriate compensation will be provided.

The site is located within a large area of south Reading identified as being a 'Biodiversity Opportunity Area'. However the site itself is an field which has recently been used for storage of plant and has had topsoil removed; as such no habitat of biodiversity value is lost or protected species would be adversely affected. Also no trees are to be removed as part of the proposed development. An Ecological Assessment has been submitted with this application, and the applicant will happy agree to follow the recommendations within this document. As such, no conflict with Policy CS36 would occur.

CS37 Major Landscape Features and Strategic Open Space

This policy states that planning permission will not be granted for any development that would detract from the character or appearance of areas designated as a Major

¹⁰ CIRIA Report C532 Control of Pollution from Construction Sites

Landscape Feature, which include the Kennet and Holy Brook Meadows in which the application site is located.

Previous sections of this report have described the adjacent and nearby land uses, including the railway line and the substation; also that the site is well screened by existing vegetation. The development would have a utilitarian appearance that would reflect its function, however given its relatively low-lying profile, small-scale and similar adjacent land uses, the development would not detract from the local major landscape feature.

SD1 Presumption in Favour of Sustainable Development

With regard to development proposals this policy states that the Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the NPPF. Planning applications that accord with the policies of the Local Plan will be approved unless material considerations indicate otherwise, taking into account whether any adverse impacts of granting permission would significantly outweigh the benefits when assessed against the policies in the NPPF taken as a whole or that specific policies in the NPPF indicate that development should be restricted.

The assessment of national planning policies as set out in the NPPF as described above and the consideration of the relevant Local Plan policies demonstrate that the proposed development accords with the Local Plan and national Government Policy. As such, this planning application supports Policy SD1 and should be approved.

DM1 Adaptation to Climate Change

This policy requires development to demonstrate how they have been designed to incorporate measures to adapt to climate change. The majority of measures listed relate predominantly to development of buildings, and residential streets and as such are not relevant to the proposed development. However the policy also requires development to minimise the impact of surface water runoff from the development.

As previously described the majority of the development would be permeable gravel with very small areas of hardstanding. This is described in further detail within the Flood Risk Assessment that accompanies this application.

Furthermore, the proposed development supports the National Grid in the increased distribution of renewable energy across the country's electricity generation network. Generating electricity from renewable sources is essential in the fight against climate change by the country to meet its carbon dioxide reduction targets and the proposed development is a vital part to help achieve these goals.

As such, the proposed development supports this policy.

DM4 Safeguarding amenity

This policy requires that development does not cause a significant detrimental impact to the living environment of existing or new residential properties from a range of potential effects including (*inter alia*) noise and disturbance, dust and fumes, artificial lighting, and visual dominance.

As previously described the development is well screened and would not be visually overbearing; there would be no artificial external lighting required during the operational phase of the development; air quality effects would be minimal; and the noise and disturbance due to the site would also be limited due to the low emission levels and the acoustic screen proposed as mitigation. As such no conflict with Policy DM4 would occur.

DM17 Green Network

This policy requires that development demonstrate how the location and type of open space provided within a scheme has been arranged such that they maintain or link to the existing Green Network and contribute to its consolidation and that all new development should maximise opportunities to create new assets and links into areas not yet identified.

The proposed development does not create any new areas of open space, water features or landscaping; such features are not generally to be found as part of development for small scale electricity infrastructure. Whilst no new areas are created, the location of the development alongside existing electricity infrastructure, minimises the effect on the local and wider Green Network; as such no conflict with this policy would occur.

DM19 Air Quality

This policy states that development should have regard to the need to improve air quality and reduce the effects of poor air quality. Development is required to take into account the cumulative effect from other developments and also the proximity to an Air Quality Management Area (AQMA).

Previous sections have demonstrated that the application site is located almost 1km from the nearest AQMA. The application is accompanied by an Air Quality Assessment which demonstrates that the proposed development is not contrary with Policy DM19.

SA16 Public and Strategic Open Space

This Policy identifies important areas of Public and Strategic Open Space and states that proposals that would result in the loss of any of these areas of open space or jeopardise their use or enjoyment by the public will not be permitted.

The proposed development occupies 0.28 ha of a very large area of Strategic Open Space located within the Kennet Valley which the reasoned justification for the policy describes as providing a tangible and enduring asset to the community.

This particular part of the Kennet Valley Strategic Open Space is not accessible to the public and is constrained by the railway to the north, and is also the location for an existing substation. Whilst the proposed development would appear to be contrary to this policy, its small scale, the lack of any public accessibility or recreational benefit to this area; and the local and national need for this type of energy development would minimise any potential adverse effect of the development in the context of this policy. It should also be noted that the Emerging Local Plan does not include Strategic Open Space designation for the proposed development site.

SA17 Major Landscape Feature

This policy defines the areas of Major Landscape Features that are described provided protection within Core Strategy Policy CS37.

7 Conclusion

The applicant is proposing to develop a gas-fuelled embedded power plant at a site located within an agricultural field, adjacent to an electricity substation, a railway line and a river to the south of the city of Reading.

The proposal will generate four new full time jobs based in the region and will produce electricity which will help support the local grid in the area.

The proposal is critically important national energy infrastructure and ensures that the local community and local businesses have energy security at times of short supply.

The location has been chosen as it is one of very few locations with the ability to connect to both the gas and electrical networks, in a location which has as low an impact possible in planning terms and which also has a willing landowner.

The proposal, by way of its scale and location does not alter the character of the area. All car parking and deliveries will be on site using the existing access.

During normal operation there will be no permanent staff or parking although the site will be manned and maintained on a daily basis.

The applicant has spent considerable resource in developing the sound-proof generator housings. These housings have been designed for this specific purpose it reduces any potential impact to well below permitted levels.

The technology proposed is the Best Available Technology for the purpose of rapid start standby generation and being connected to the network at the point of use offers demonstrable efficiency improvements 25% to 35% over non-distributed current standby generation. The technology proposed is identical in character to that being proposed by DBEIS as new build capacity plant.

The technology is considered by DBEIS and the government to be a form of low carbon energy provision and is the cleanest form of fossil fuel production available. In any event the site shall not operate continuously as it is providing a form of back-up power.

The project is in alignment with UK Government policy and the Energy Market Reform legislation.

Accordingly and respectfully, we ask that planning permission is granted.

Appendix 1

Technical considerations to connecting to the National Grid

Electrical Constraints

Power transmission in the UK since privatisation has become somewhat fragmented. Each region is operated by a different Distribution Network Operator (DNO). In Berkshire this is Scottish and Southern.

From a power station, electricity is transmitted at very high voltage (275kV and 400kV) around the country by National Grid. From National Grid it is fed into the distribution networks at Grid Connection Points (GCPs). These GCPs are major substations.

From the GCPs the power is then initially transmitted at 132kV around the distribution network on the large pylons with which we are all familiar. At various points the power is 'tapped off' at 'primary substations' and from these primary substations it is distributed more locally - say to a city or large town.

Embedded generation is so called when the generator feeds its power into the network, not directly into the National Grid but at some point within the distribution network. This is where the difficulties lie for embedded generation. The distribution networks are old and underinvested. Industry experts have estimated that hundreds of billions of pounds will be needed across the country to update and upgrade the power transmission system in the UK.

The issues that arise when seeking to establish a Point of Connection (POC) for any potential embedded generator are manifold and include but are not restricted to:

Fault Levels

The DNO has a statutory requirement to keep the fault levels on any transmission line below predetermined levels. Fault levels are affected by the number of users connected to the line, the type of user (e.g. industrial, residential etc.), the equipment faults inherent in the transformers and other transmission equipment, and the faults caused by any other embedded generator. It is fair to say that the whole of the UK's DNO network is 'stressed' in this regard and it is unusual to find a vacant power line with sufficient 'fault headroom'. The higher the voltage at which connection to the network can be made the less of an influence these inherent faults have for embedded generators. For this reason all of the potential points of connection identified by the applicant are located at or as close as possible to the primary substations.

Capacity

The district network, as any electrical circuit, has a fixed and limited capacity at any point. That is, the current that can flow through the cables, switches and transformers has a maximum threshold. Switches and busbars located mainly at substations act in the same way as circuit breakers in a domestic home. They have a 'rating', say 400 Mega Volt Amps (MVA). Many substations have older switches and equipment with ratings far below those of modern equipment and were designed on a power demand estimate of 30 years ago. All of the DNOs have embarked on a programme of upgrading this equipment but at present this issue of capacity for embedded generators is a major problem. Furthermore, DNOs like to maintain 'headroom capacity' for new customers to connect to the system; this further restricts the potential points of connection.

Voltage Drop

The Distribution Code in the UK allows a 4% maximum voltage drop on any branched line. Voltage drop is a product of the current and the impedance of the circuit in an alternating current arrangement. In layman's terms - increasing the current by installing an embedded station can cause the voltage drop on a line to fall beyond allowable limits. This once again is a major issue for DNOs and embedded generators alike. Fortunately, as the voltage increases the current drops and so the effects of voltage drop reduce, hence the reason why National Grid transmit at such high voltages and why the embedded generation stations proposed by the applicant are all located at or as close as possible to the primary substations.

The applicant has analysed fully, all the DNO networks across England and Wales and spoken to all of the DNOs to identify where their networks can accept embedded generation. This has been done in consultation with the local DNOs and National Grid's engineers and their asset management teams.

The choice of the proposed site is as a result of some of the issues given above – it is one of the very few places that a connection of an embedded power plant is practical and where the site has sufficient fault level head room and gas capacity to accept this generation.