The Drax Power (Generating Stations) Order

Land at, and in the vicinity of, Drax Power Station, near Selby, North Yorkshire

Note on the Substantial Weight to be Given to Need and Application of the Tests Under Section 104 of the Planning Act 2008

(Submitted for Deadline 5)

The Planning Act 2008
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(q)

Drax Power Limited

Drax Repower Project

Applicant:	DRAX POWER LIMITED
Date:	January 2019
Document Ref:	8.5.16
PINS Ref:	EN010091

Document History

Document Ref	8.5.16		
Revision	001		
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Signed		Date	09/01/2019
Approved By	Richard Griffiths		
Signed		Date	09/01/2019
Document Owner	Pinsent Masons LLP		

1. PURPOSE OF THIS PAPER

1.1 At the Issue Specific Hearing ("**ISH**") on Environmental Matters on 5 December 2018, the Applicant undertook to set out for the Examining Authority ("**ExA**") how the Applicant considers paragraphs 3.1.4 and 3.2.3 of National Policy Statement ("**NPS**") EN-1 should properly be applied.

1.2 These paragraphs raise the issue of need and the weight to be attributed to need in the balancing exercise the ExA and the Secretary of State ("**SoS**") are required to undertake pursuant to section 104(7) of the Planning Act 2008 ("**PA 2008**"). The proper application of this subsection formed part of a broader discussion at the ISH as to the operation of section 104 of the PA 2008 as a whole.

1.3 As a result, this paper has been prepared to address for the ExA and the SoS how the Applicant considers the requirements of section 104 should be, and have been, met, and in doing so, how the policies of the energy NPSs, in particular the weight to be given to need under EN-1, should be applied.

1.4 This paper will firstly set out the legal and policy context for the ExA's and the SoS's decision making, before setting out and explaining the various information and factors about the Proposed Scheme that feed in to the application of the relevant policy and legal tests and, finally, setting out how the Applicant submits those policy and legal requirements should be applied in the case of the Proposed Scheme (i.e. the Applicant's Repower Project that is the subject of this application (the "**Application**") for a Development Consent Order that is before the ExA).

2. LEGAL AND POLICY CONTEXT

2.1 Legal context

2.2 Section 104(3) of the PA 2008 provides:

The Secretary of State must decide the application in accordance with any relevant national policy statement, except to the extent that one or more of subsections (4) to (8) applies.

2.3 Subsections (4) to (8) of section 104 effectively provide exceptions to the application of section 104(3), and those exceptions are as follows:

(4) This subsection applies if the Secretary of State is satisfied that deciding the application in accordance with any relevant national policy statement would lead to the United Kingdom being in breach of any of its international obligations.

(5) This subsection applies if the Secretary of State is satisfied that deciding the application in accordance with any relevant national policy statement would lead to the Secretary of State being in breach of any duty imposed on the Secretary of State by or under any enactment.

(6) This subsection applies if the Secretary of State is satisfied that deciding the application in accordance with any relevant national policy statement would be unlawful by virtue of any enactment.

(7) This subsection applies if the Secretary of State is satisfied that the adverse impact of the proposed development would outweigh its benefits.

(8) This subsection applies if the Secretary of State is satisfied that any condition prescribed for deciding an application otherwise than in accordance with a national policy statement is met.

2.4 **Policy context**

2.5 The following should be noted from the relevant NPS policies, in so far as they address the need for fossil fuel generation (as set out in the Applicant's Responses to Written Representations (REP3-024)):

2.5.1 The UK economy is reliant on fossil fuels and they are likely to play a significant role for some time to come (NPS EN-1, paragraph 2.2.5).

2.5.2 Whilst the UK must reduce over time its dependence on fossil fuels, some fossil fuels will still be needed during the transition to a low carbon economy (EN-1, paragraph 2.2.23).

2.5.3 The UK needs all the types of energy infrastructure covered in EN-1 (which includes fossil fuel generation) in order to achieve energy security at the same time as reducing (dramatically) greenhouse gas emissions (EN-1, paragraph 3.1.1). NPS EN-2, paragraph 2.1.2 is explicit: the decision maker should act on the basis that the need for fossil fuel electricity generating infrastructure has been demonstrated.

2.5.4 Fossil fuel generation has particular benefits: it can be brought on line quickly when there is high demand and shut down when demand is low, thus complementing generation from nuclear and the intermittent generation from renewables (EN-1, paragraph 3.3.4).

2.5.5 Applications should be assessed on the basis that the Government has demonstrated that there is a need for those types of infrastructure covered by the energy NPSs (EN-1, paragraph 3.1.3). EN-1 covers fossil fuel electricity generation (see section 3.6) and EN-2 specifically sets out the national policy for fossil fuel generating infrastructure. Substantial weight should be given to the contribution that projects would make towards satisfying this need (EN-1, paragraph 3.1.4). The weight which is attributed to considerations of need in any given case should be proportionate to the anticipated extent of a project's actual contribution to satisfying the need for a particular type of infrastructure (EN-1, paragraph 3.2.3).

2.5.6 The Government does not consider it appropriate for planning policy to set targets for or limits on different technologies (EN-1, paragraph 3.1.2). This is in part because it is not possible to make accurate predictions about the size and shape of energy demand in the future (EN-1, paragraph 3.3.18).

2.5.7 Further, the larger the difference between available capacity and demand (i.e. the larger the safety margin), the more resilient the system will be (EN-1, paragraph 3.3.3). Resilience is part of security of supply which is itself an aim of national energy policy.

2.5.8 There are likely to be advantages to the UK of maintaining a diverse range of energy sources so that the UK is not overly reliant on one technology (avoiding dependency on a particular fuel or technology type) (EN-1, paragraph 3.3.5).

2.5.9 Further capacity is required to: provide energy security and meet carbon reduction objectives (EN-1, paragraphs 3.3.2-3.3.6); replace closing existing capacity (EN-1, paragraphs 3.3.7-3.3.9); support renewable energy generation (and, for this reason, fossil fuel plants may still have a role even when the sector is almost entirely decarbonised (EN-1, paragraphs 3.3.10-3.3.12)); and meet future increases in demand (in particular, from the electrification of sectors such as industry, heating and transport) (EN-1, paragraphs 3.3.13-3.3.14).

2.5.10 There is an urgent need for new energy NSIPs. This statement applies to all energy NSIPs (including fossil fuel generation) but EN-1 notes the particular urgent need for low carbon energy generation (EN-1, paragraph 3.3.15). It is simply not correct, as ClientEarth attempts to do (in both its oral submissions at the ISH and in its post hearing submission (REP4-017)), to read into EN-1 a priority list of energy NSIPs. Nowhere in EN-1 does it refer to a particular type of energy infrastructure as "low priority" or, for that matter, as "high priority". Rather an urgent need has been established in EN-1 for all types of energy infrastructure referred to in the energy suite of NPSs, but with a particular urgent need identified for low carbon. The urgent need does not relate to decarbonising the power sector alone. The energy NPSs must also deliver on increasing electricity generation in order to enable decarbonisation across all sectors. This process will increase the demand for electricity. All types of generation therefore can contribute to decarbonisation of the UK as a whole.

2.5.11 As to scale of the need, as at July 2011, the Government anticipated a need for 18 GW of new non-renewable generation capacity (EN-1, paragraph 3.3.22). However, the figures in paragraph 3.3.22 are not targets or limits on any new generating infrastructure to be consented in accordance with the energy NPSs (EN-1, paragraph 3.3.24).

2.5.12 EN-1 makes it very clear in paragraph 3.3.24 that it is not the planning system's role to deliver specific amounts of generating capacity for each technology type and EN-1 certainly does not limit the need for fossil fuel generation to providing "*residual*" generation as ClientEarth alleges in paragraph 6 of its post hearing submission (REP4-017). It should also be noted that reference to around 18 GW of new non-renewable generation capacity by 2025 in NPS EN-1 would appear to be an underestimate, as National Grid's Future Energy Scenarios[1] forecasts that 30.7 GW – 31.7 GW of gas capacity will be required on the power grid in 2030.

2.5.13 EN-1, paragraph 3.6.1 provides: "*Fossil fuel power stations play a vital role in providing reliable electricity supplies: they can be operated flexibly in response to changes in supply and demand, and provide diversity in our energy mix. They will continue to play an important role in our energy mix as the UK makes the transition to a low carbon economy, and Government policy is that they must be constructed, and operate, in line with increasingly demanding climate change goals.*" (see also EN-2, paragraph 1.1.1).

2.5.14 For this reason some of the new conventional generating capacity needed is likely to come from new fossil fuel generating capacity in order to maintain security of supply and to provide flexible back-up for intermittent renewable energy from wind (EN-1, paragraph 3.6.3).

2.5.15 All commercial scale (at or over 300 MW) combustion power stations (including gas, coal, oil or biomass) have to be constructed Carbon Capture Ready ("**CCR**") (EN-1, paragraph 3.6.6; EN-2, paragraphs 1.1.1 – 1.1.2). Paragraph 4.7.10 is clear: consent must not be granted unless such a station is CCR (as defined in that paragraph). National policy, therefore, recognises the need for fossil fuel generating stations and a need to meet the UK's climate obligations. The balance is struck in national policy by requiring any application for a new fossil fuel generating station over 300MW to be refused if it is not CCR (see also paragraphs 2.3.4 – 2.3.5 of EN-2).

2.5.16 Paragraph 2.5.2 of EN-2 states: "*CO2 emissions are a significant adverse impact of fossil fuel generating stations. Although an ES on air emissions will*

[1] http://fes.nationalgrid.com/media/1363/fes-interactive-version-final.pdf

include an assessment of CO2 emissions, the policies set out in Section 2.2 of EN-1 will apply, including the EU ETS. The [Secretary of State] does not, therefore need to assess individual applications in terms of carbon emissions against carbon budgets and this section does not address CO2 emissions or any Emissions Performance Standard that may apply to plant." Section 2.2 of EN-1 describes how policy supporting new energy generation capacity sits alongside the UK's climate change obligations. In short, the need for fossil fuel generating stations is identified in the context of, and with the aim of, meeting the legally binding target contained in the Climate Change Act 2008 to cut greenhouse gas emissions by at least 80% by 2050 as compared to 1990 levels.

2.5.17 EN-1, paragraph 4.1.2 states: "*Given the level and urgency of need for infrastructure of the types covered by the energy NPSs set out in Part 3 of this NPS, the [Secretary of State] should start with a presumption in favour of granting consent to applications for energy NSIPs. That presumption applies unless any more specific and relevant policies set out in the relevant NPSs clearly indicate that consent should be refused. The presumption is also subject to the provisions of the Planning Act 2008 referred to at paragraph 1.1.2 of this NPS*."

2.6 With respect to the weight to be attributed to considerations of need, paragraph 3.2.3 of NPS EN-1 is an important paragraph but it should be read together with paragraphs 3.1.3 and 3.1.4 which provide the over-arching decision making principles.

2.7 It is very clear that the starting point for assessing the Application is on the basis that NPS EN-1 has set out that need has been established for fossil fuel electricity generation (paragraph 3.1.3 and this is re-affirmed in paragraph 2.1.1 of NPS EN-2 which states that "*...the [Secretary of State] should act on the basis that the need for the infrastructure covered by this NPS has been demonstrated*"). If there is a need for fossil fuel electricity generation then logically there is a need for a scheme for fossil fuel electricity generation. Therefore, the ExA and the SoS are told that need for the Proposed Scheme has been demonstrated.

2.8 Paragraph 3.1.4 of NPS EN-1 then tells the ExA and the SoS that the contribution the project in question would make towards satisfying this already demonstrated need must be given substantial weight. Paragraph 3.1.4 does not say that this allocation of substantial weight is subject to the decision maker reviewing the latest "*up-to-date modelling and information*", as ClientEarth at paragraph 7 of its post hearing submission (REP4-017) asserts. The allocation of substantial weight in paragraph 3.1.4 is what the Government has decided should be given to the contribution that energy NSIPs that are covered by NPSs EN-2 to EN-6 would make. Footnote 16 to paragraph 3.1.4 explains the evidential basis on which the Government reached that conclusion. Whether that category of weight is changed in the future can only be decided by the SoS when he reviews NPS EN-1 pursuant to section 6 of the PA 2008, not through the determination of a single application for development consent under the PA 2008.

2.9 The precise amount or category of weight (within that floor set of "substantial") is determined on the basis set out in paragraph 3.2.3 of NPS EN-1. Accordingly, the ExA and the SoS are not required to grapple with whether there is a need for the type of infrastructure in question and, accordingly, whether there is a need for the Proposed Scheme; the ExA and the SoS are told to assume there is a need and that substantial weight must be given to that need.

2.10 What the ExA and the SoS have to grapple with is the precise amount or category of substantial weight to give to the "*anticipated extent*" of the actual contribution that the project before them would deliver in satisfying that already identified need.

2.11 The use of the words "*anticipated extent*" are important as no-one can be definitive about the precise extent of electricity demand going forward and the NPS makes it expressly clear that a projection is simply that. Furthermore, EN-1 and EN-2 do not require applicants to carry out an energy need review exercise each time an application is submitted relying on EN-1 or EN-2 (see further below at paragraph 3.50 and following, under the heading Irrelevant Considerations). In terms of the anticipated extent of the Proposed Scheme's actual contribution to satisfying the need for fossil fuel generating stations, see below at Section 3.

2.12 Biofuelwatch, amongst others, has attempted to argue less reliance on the NPS based on its age. Quite apart from the fact that such submissions amount to an attack on the merits of the NPS which is impermissible (pursuant to section 106(1)(b) of the PA 2008) and ignore the statutory requirement to decide applications in accordance with the relevant NPSs (section 104(3) of the PA 2008), the submissions confuse need and projections (discussed further at paragraph 3.50 and following, under the heading Irrelevant Considerations) and, in any event, the Government could have amended the NPS at any time including by prohibiting fossil fuel generation. The Government has not done this. Indeed, the role of fossil fuels identified in NPS EN-1 has been endorsed in more recent Written Ministerial Statements:

2.12.1 18 November 2015: "*New nuclear and gas will be central to our energy secure future..." and "One of the greatest and most cost-effective contributions we can make to emission reductions in electricity is by replacing coal fired power stations with gas*."

2.12.2 17 May 2018: "*The UK must have safe, secure and affordable supplies of energy with carbon emissions levels that are consistent with the carbon budgets defined in our Climate Change Act and our international obligations. We believe that gas has a key part to play in meeting these objectives both currently and in the future*." and "*...every scenario proposed by the Committee on Climate Change setting out how the UK could meet its legally binding 2050 emissions reduction target includes demand for natural gas*."

2.13 The above cited Written Ministerial Statements were provided as appendices to the Written Summary of Applicant's Oral Case at Issue Specific Hearing (Environmental Matters) (REP4-012) submitted for Deadline 4.

2.14 ClientEarth has asserted (paragraph 5, Post-Hearing Submission and Response to Deadline 3 Submissions, REP4-017) that unabated fossil fuel generation is given the lowest priority in terms of scale and urgency, and that there is no suggestion that the need for unabated fossil fuel generation is urgent or large in scale. Its submission refers to unabated fossil fuel generation as having a "residual role". It is wrong to say that the need for fossil fuel generation is not urgent. The reasons for the need for substantial increases in generation capacity have been set out above. Paragraph 3.1.1 of EN-1 states "*The UK needs all the types of energy infrastructure covered by this NPS in order to achieve energy security at the same time as dramatically reducing greenhouse gas emissions*". Government could have easily established a priority hierarchy. It deliberately chose not to. Paragraph 3.3.15 of EN-1 applies to all energy infrastructure covered by that national policy statement. Whilst that paragraph makes reference to a "particular" need for low carbon energy, ("*there is an urgent need for new (and particularly low carbon) energy NSIPs to be brought forward as soon as possible*"), importantly it ascribes the urgent need to all types of energy NSIPs including fossil fuels. It is simply wrong to say that the NPS approaches the need for fossil fuel generation as something other than urgent. There is nothing in the NPS which requires decision makers to give a greater priority or weight to low carbon generation than to fossil fuel generation.

2.15 NPS EN-1 does not refer to fossil fuel generation as having an increasingly "residual role", and the paragraphs cited by ClientEarth in its submission (EN-1 paragraphs 3.3.11, 3.6.1, 3.6.3 and 3.6.8) actually highlight the ongoing need for fossil fuel

generation, and demonstrate the point that such generation is required to support decarbonisation and the diversification of the energy mix. It is clear from NPS EN-1 that the role of fossil fuel energy sources is not simply as "*back-up generation*" (paragraph 6 of ClientEarth's submission (REP4-017)). The Applicant's position is not that there is only a need for fossil fuel generation, but that such generation is part of a mix of energy that is required in order to move to a low carbon economy and meet climate change targets. That position is entirely consistent with NPS EN-1.

2.16 It is true that the emphasis in EN-1 is on bringing forward low carbon technology. However, the Government recognises the need for fossil fuel generation and supports it in the national policy statement (subject to it being CCR). It would have been quite easy for the Government to say either it will not permit new fossil fuel generation plants (either now or from a particular year in the future) or that any such plants would have to have CCS or to limit the amount to be consented to a specific level of capacity. It did none of these things and, indeed, states that the need for plants including fossil fuel generation ought to be assumed. Any criticism that the Proposed Scheme is not low carbon, therefore, fails properly to reflect the national policy statements. The Government clearly views proposals such as the Proposed Scheme as necessary support in the move to a low carbon electricity sector and not separate to it. Moreover, National Grid's Future Energy Scenarios (July 2018)[2] forecasts that 30.7 GW – 31.7 GW of gas capacity will be required on the power grid in 2030 whilst at the same time staying on track to meet our carbon budget targets. There is no dispute that electricity generation demand is increasing and is set to increase to 2050.

2.17 As noted above, NPS EN-1, paragraph 3.1.2 states that the Government "*does not consider it appropriate for planning policy to set targets for or limits on different technologies*" and paragraph 3.3.14 makes clear, it is not the planning system's role to "*deliver specific amounts of generating capacity for each technology type*."

2.18 Finally, paragraph 4.1.2 of NPS EN-1 states that "*Given the level and urgency of need for infrastructure of the types covered by the energy NPSs set out in Part 3 of this NPS, the [SoS] should start with a presumption in favour of granting consent to applications for energy NSIPs*. *That presumption applies unless any more specific and relevant policies set out in the relevant NPSs clearly indicate that consent should be refused*." This presumption applies to all types of energy infrastructure covered by EN-2 to EN-6. As there are no specific and relevant policies in NPS EN-2 that state that consent for the Proposed Scheme should be refused, the presumption in favour of granting consent applies to the Proposed Scheme.

2.19 In summary;

2.19.1 NPS EN-1, as re-affirmed by NPS EN-2, establishes the need for the Proposed Scheme;

2.19.2 NPS EN-1 requires that substantial weight be given to the contribution that the Proposed Scheme would make towards satisfying the identified need;

2.19.3 the precise amount of weight, within the floor set of "substantial", that is attributed to the consideration of need in this case should be proportionate to the anticipated extent of the Proposed Scheme's actual contribution to satisfying the need;

2.19.4 there is a presumption in favour of granting consent for the Proposed Scheme; and

2.19.5 the ExA, and the SoS then has to balance the Proposed Scheme's adverse impacts against its benefits (as per EN-1 paragraph 4.1.3, the latter includes

[2] http://fes.nationalgrid.com/media/1363/fes-interactive-version-final.pdf

the substantial weight that must be given to the Proposed Scheme's contribution to satisfying the identified need, with the precise amount of substantial weight to be applied left to the ExA and the SoS). For this balancing exercise (see Section 4) and also section 104 of the PA 2008 (see Section 6).

2.20 **Interface between section 104(7) and the NPS requirements**

2.21 As set out above, section 104(7) provides an "exception" to the requirement of section 104(3) (that the application should be determined in accordance with the NPS) *"if the Secretary of State is satisfied that the adverse impact of the proposed development would outweigh its benefits".* This therefore requires the ExA and the SoS to undertake a balancing exercise of the Proposed Scheme's beneficial and adverse impacts.

2.22 The NPS policies are relevant to that balancing exercise, as they provide guidance or a framework within which various factors are to be balanced against each other. NPS EN-1 does not only provide such advice in relation to the actual contribution of the scheme to the established need for all types of energy infrastructure, other examples in EN-1 are directions on the weight to be given to alternatives (paragraph 4.4.3), CHP (paragraph 4.6.8), air quality (5.2.9), sites designated for their biodiversity (paragraph 5.3.8), harm to protected species (paragraph 5.3.17), flooding (paragraph 5.5.16) and protected areas of natural beauty (paragraph 5.9.9).

2.23 ClientEarth appears to assert (in its Written Representation and its recent submission at Deadline 4) that the exercise required by section 104(7) and the application of the weight to be given to various factors pursuant to the NPS policies, are two separate exercises. The effect of this is that the balancing exercise in section 104(7) is carried out in a vacuum, the consequence of which would presumably be that all impacts are treated equally. By way of example, adverse harm to an Area of Outstanding Natural Beauty would be treated equally to adverse harm to an unprotected view or landscape.

2.24 Section 104(7) is not a disapplication of EN-1. It is a section that provides important flexibility to the decision maker. It does not require that the contents of any relevant national policy statement must be put out of mind and assumed not to exist. The balance of benefits and dis-benefits can only properly be measured by taking full account of the Government's national policies relevant to the development in question, including any presumptions in relation to need. To do otherwise would be to set aside the national policy that is put at the heart of the PA 2008 and to ignore a relevant consideration: section 104(2)(a) of the PA 2008 which requires a decision maker as a matter of law to take relevant NPSs into account. Section 104(7) does not dis-apply section 104(2). Accordingly, it would be unlawful to consider the balancing exercise under section 104(7) without regard to the relevant NPSs.

2.25 ClientEarth refers to the Court's decision in the judicial review of the Thames Tideway DCO[3] and that the balancing exercise in section 104(7) cannot be overridden by any decision making rule stipulated by the NPS.[4] It is plain from the Court's decision (in particular those sections cited by ClientEarth in the footnotes to its submission at Deadline 4), that in applying section 104(7) the statement of national need reflected in the NPS and any particular detriments which may be identified are weighed against each other. The Applicant agrees that the correct approach to section 104(7) is as set out by Lord Justice Sales in this case, and that section 104(7) allows the possibility

[3] *R (Thames Blue Green Economy Limited) v SoS for Communities and Local Government* [2015] EWCA Civ 876

[4] For clarification, the Court of Appeal's decision was not a decision determining a judicial review, but a decision deciding to refuse applications to appeal the decision of Justice Ouseley who had refused to give permission to apply for judicial review of the Secretary of State's decision to grant the Thames Tideway DCO. The claimant was seeking to argue that section 104(7) of the PA 2008 obliged the SoS to consider new arguments regarding whether there was a need for a Thames Tideway Tunnel.

that the demonstrated need for a project may be outweighed by its adverse impacts. The Applicant has never asserted that it is not possible for the substantial weight to be given to the need identified in the energy NPSs to be outweighed by adverse effects; its position has simply been that in undertaking that balancing exercise, factors are to be given the weight required by the NPS – so substantial weight must be given to the contribution which projects would make towards satisfying the identified need. There is nothing in the Court of Appeal's judgment (and certainly nothing ClientEarth has pointed to) that suggests the balancing exercise is done without regard to the weight the NPS requires considerations such as need should be given in undertaking such balancing. It is for the ExA and the SoS to weigh in the balance a project's adverse effects against its benefits, the latter including the substantial weight that is to be applied to satisfying need.

3. FACTORS TO BE TAKEN INTO ACCOUNT IN DETERMINING THE PROJECT'S ACTUAL CONTRIBUTION TO NEED

3.1 This section of this paper sets out the factors that will be relevant for the ExA and SoS to take into account when considering the anticipated extent of the Proposed Scheme's actual contribution to satisfying the need for fossil fuel generating stations.

3.2 Generation capacity

3.3 The Proposed Scheme will be able to deliver 3.6GW of high efficiency generation (for more explanation with respect to efficiency, see paragraph 3.5 and following under the heading Affordability) as well as store up to 200MW of electricity in its proposed battery storage capability facility. This generation and storage capacity clearly falls within the identified need for new electricity generation, as set out in NPS EN-1. Whilst NPS EN-1 is clear that projections on the UK's future electricity demand are just that, projections (see, for example, paragraph 3.3.14), EN-1 refers to capacity of electricity generation potentially needing to triple.

3.4 In addition to the UK wide need for electricity, there is also a need based on National Grid's boundary areas around the country, the latest projections of which are set out in the National Grid's Electricity Ten Year Statement 2018[5] (Chapter 3 of which was provided at Appendix 4 to the Written Summary of Applicant's Oral Case at Issue Specific Hearing (Environmental Matters) (REP4-012)). If one simply looks at these projections, then the capacity of the Proposed Scheme makes a contribution to the applicable boundary area for Drax. However, even with the Proposed Scheme there would still remain a shortfall. The projections set out in National Grid's Electricity Ten Year Statement 2018 and an explanation of the boundary area are set out in paragraph 3.16 and following under the heading System Services.

3.5 Affordability

3.6 The Proposed Scheme contributes to the need to provide affordable energy in line with the Government's energy policy. It does this because of the efficiency gains associated with construction, but more importantly operational efficiencies, which will mean the Proposed Scheme displaces less efficient generation.

3.7 The Proposed Scheme uses existing infrastructure, such as the steam turbines and cooling towers, which is currently used for the coal fired units and would be reutilised for the new gas fired generating units/stations. These elements of the existing power station have been maintained by Drax so that they meet the latest standards in order to deliver highly efficient generation. The re-use of existing infrastructure also drives down cost for the Proposed Scheme. This means that the capital costs will be lower for the Proposed Scheme than other new CCGT plant, which will be reflected in a lower capacity market auction price and ultimately lower costs for consumers.

[5] https://www.nationalgrideso.com/sites/eso/files/documents/ETYS_2018_Document_v1.pdf

3.8 The additional elements introduced as part of the Proposed Scheme are based on the latest and most efficient technologies available. For instance, the technology around which the parameters for the Proposed Scheme have been based are for >60% efficient gas turbine technology (Siemens HL class) when compared with existing CCGTs with efficiencies of approximately 55%. Hyperbolic cooling towers (such as those at the Existing Drax Power Station Complex) are the most efficient method of cooling for inland power stations. Latest repacking technology (replacement of the heat exchange baskets at the base of the towers) within the towers and regular maintenance will deliver significant benefits compared with existing thermal generation plant. Further, by incorporating a battery storage facility, the power island (the generating assets) will have the capability of providing further flexible generation performance.

3.9 There is a long history of power generation at Drax Power Station, and the Existing Drax Power Station Complex is currently used for this purpose, meaning there would be no material change to the land use. The majority of the site is classified as brownfield, meaning permanent loss of currently agricultural land and acquisition of third-party land or rights over third party land would be minimised. The re-use of land that is in the ownership of Drax also drives down costs which would otherwise have to be expended in order to acquire land.

3.10 The Power Station Site already has existing electrical connections, and the Proposed Scheme is technically feasible. The output from each of Unit X and Unit Y would be connected to the grid using Gas Insulated Switchgear housed in a new building close to the generating units. Connection from the Gas Insulated Switchgear building would be routed to the existing National Grid 400kV substation.

3.11 The costs associated with the construction of the Proposed Scheme are therefore minimised by reuse of existing land and infrastructure, whilst achieving operational efficiencies due to the technology being utilised and the efficiency gains from the reuse of current infrastructure that has been maintained to a high standard. These are all factors giving the Proposed Scheme an economic advantage in the energy market, which impacts on the affordability of energy.

3.12 The way in which the efficiency of energy generation is prioritised in the market, is explained by the concept of the 'Stack'. The term 'Stack' in the market sense is applied to the list of available generation, at a point in time. The list is ordered based on the cost of generation (i.e. efficiency). The cost in question is the Short Run Marginal Cost ("**SRMC**"), that is, the cost of producing the next MWhr ignoring fixed cost such as salaries, business rates, capex etc. There is no published Stack, although market participants forecast it using assumptions of generating costs, fuel, carbon emissions and low carbon support, start up or shut down costs. These assumptions, along with observation of how a generating unit is dispatched compared to market price, lead to the assumptions of SRMC. The cost of marginal plant which meet the final MW of demand sets the price for the entire Stack; the more efficient the plant in the Stack, the lower the price for electricity is.

3.13 In a liquid efficient market the cheapest generator will have an advantage over more expensive generators in potential selling price and will therefore be dispatched by National Grid first (being "dispatched" is similar to being purchased). The market will buy sufficient volume to meet demand from multiple generators. It follows, therefore, that with efficient plant on the system that can provide both electricity generation and system services, the more plants that will be available to be dispatched that are cheaper for the consumer – in simple terms, efficient plant means cheaper electricity. In essence, without plants such as the Proposed Scheme, more expensive plants will have to be called upon, meaning more expensive electricity.

3.14 It follows from this that less efficient plants (such as coal and older gas plants) are further down the Stack than renewable plants, which cost less to run and are therefore more efficient. For affordable electricity capacity it is therefore likely that the more

efficient (and therefore cheaper) energy producers will be dispatched first, and so as long as the sun is shining and wind blowing, that would be the renewable plants (subject to the need to ensure security services, as discussed later in this note at paragraph 3.16 and following under the heading System Services in relation to the "SO Stack").

3.15 As explained above, the Proposed Scheme would be highly efficient, and as a result of that efficiency (as well as other factors discussed later in this note at paragraph 3.16 and following under the heading System Services in relation to its flexibility to offer enhanced security services and its location in Boundary B7a) it would sit high on the Stack, displacing less efficient providers and thereby promoting energy affordability, but we do not expect that the Proposed Scheme would sit high enough on the Stack to displace current or future renewable generation.

3.16 **System services**

3.17 The Proposed Scheme makes a significant and important contribution to need with respect to the security and resilience of electricity supply.

3.18 The UK's electricity system is divided into a national high voltage transmission network and a number of regional, lower-voltage distribution networks. It is the role of energy suppliers to buy enough electricity from power stations and other electricity producers to meet their customers' needs. It is the role of National Grid, the operator of the high voltage transmission network, to plan and operate the system to make sure supply and demand are balanced in real time, on a second-by-second basis.

3.19 With respect to system support services, whilst all types of energy generation provide capacity, not all types provide system services which is one of the main requirements of the National Grid. In addition to balancing supply and demand in real time, National Grid is responsible for ensuring that the national transmission system is operated within a number of defined technical limits to ensure its safety and stability, and it does this by procuring a number of system services, including:

(a) **Frequency response**: The national transmission system must maintain a stable system frequency of 50 Hz. Frequency response is an automatic change in generation or demand to counteract changes in system frequency.

(b) **Inertia**: Inertia determines how quickly frequency will change when there is an imbalance between generation and demand; the greater the inertia on the system, the slower the change in frequency.

(c) **Voltage control**: Reactive power (measured in Mvar) is used to control voltage across the network. Without this control, changes in voltage could damage generating equipment and infrastructure associated with it. Generation, demand and network equipment (such as transformers, overhead lines and cables) can either generate or absorb reactive power. These contributions need to be kept in balance to keep the voltage at the right level. Voltage is a local property of the system, so requirements vary from one region to another regarding how voltage is managed and controlled.

(d) **Black start**: Black start is the service used to restore the system in the unlikely event of a partial or total system shut down. To restore power, National Grid needs generation capable of starting up without external power supplies, energising the transmission system and supporting the reconnection of demand.

(e) **Short circuit levels (SCL)**: During system disturbances synchronous generators will contribute short circuit current to the system. Higher SCL will make conditions less onerous for generators to ride through system disturbances as voltage deviations will be less pronounced.

3.20 These system support services are needed to support the higher penetration of renewables, and these services will be diminished as coal comes off line.

3.21 National Grid procures these system needs through a combination of bilateral contracts and the Balancing Mechanism ("**BM**"). The BM is the period one hour prior to real time during which National Grid can instruct electricity generators to increase or decrease their generation in real time (or for some participants, increase or decrease their electricity consumption). The costs of procuring these services are ultimately passed on to consumers through charges on electricity bills, and so impact on the affordability of electricity.

3.22 National Grid as the system operator is reliant on thermal generation to provide these services, specifically coal or gas-fired power stations. These power stations can increase or decrease their electrical output in response to the demands of the transmission system, making them particularly useful sources of flexibility when needed at short notice (i.e. dispatchable).

3.23 In contrast, intermittent renewables such as wind and solar are reliant on the weather to generate their electricity. As a result, they cannot adjust their output when required and therefore cannot provide a full suite of controllable, dispatchable system services – solar and wind can only provide reactive and active power at lower levels of generation. Nuclear power stations, meanwhile, are technically capable of providing some level of flexible operation but for commercial reasons generally operate at full capacity. These sources of power can therefore not assist with providing all of the system needs set out above, needed by National Grid to balance supply and demand.

3.24 Therefore, as the power sector continues to decarbonise, it is crucial that the country's power system retains and replaces a degree of flexible, dispatchable thermal generation alongside the continued deployment of low carbon technologies.

3.25 However, in recent years a significant number of thermal power stations around the country have closed. Since 2012, coal generation has reduced by 80%. Coal capacity (12.9 GW) is now lower than the capacity of solar PV panels (13.1 GW) installed nationwide[6].

3.26 Over a similar timeframe, there has been a significant increase in decentralisation in electricity generation, driven by growth in smaller scale renewable generators connecting to local distribution networks rather than the national transmission system. Small scale renewables are normally decentralised and are not visible to the system operator (National Grid) which means that predicting their contribution and therefore the contribution required by larger generators is more difficult. This contributes to the risk of instability of the national grid. Currently, there is 103 GW of generation capacity on the system, of which 73% is transmission connected (National Grid level), 23% distribution level connected (Distribution Network Operators (DNO) for example Northern Power Grid) and 5% microgeneration[7]. In addition, distribution connected generators cannot currently contribute to transmission level system stability, reinforcing the importance of ensuring new centralised generation is coming through.

3.27 The growth of intermittent renewables such as wind and solar generation in recent years, displacing conventional thermal generation has led to the energy system

[6] https://www.drax.com/energy-policy/great-britain-almost-ready-coal-free-summers/
[7] http://fes.nationalgrid.com/media/1363/fes-interactive-version-final.pdf (pg. 38)

becoming less predictable and more volatile. Output from these forms of generation can vary due to weather events, increasing the need for National Grid to intervene by commissioning dispatchable (usually thermal) plant to ramp up or down, often at short notice. Conversely, output from wind and solar can be high whilst electricity demand is low. As a result, the costs of managing the national transmission system – both in terms of matching supply with demand but also maintaining grid stability by procuring system services -- have risen to over £1bn per annum and are forecast to rise to £2bn per annum by 2020.

3.28 ClientEarth responded at deadline 4 and made reference to a report generated by Vivid economics and Imperial College London. In paragraph 10 of ClientEarth's response they make the following statements associated with inertia, apparently drawn from the report. The scenario which ClientEarth have used is the high renewables scenario.

(a) Wind and solar could provide over 60% of electricity generation by 2030.

(b) 20 GW of thermal generation capacity is needed to provide inertia.

3.29 As identified in the previous paragraphs above (see paragraph 3.19), system inertia is one element of system support which is required by National Grid and would largely be met by gas plant. However, the relevant section of the Vivid Economics report includes the following overview of the modelling scenario which was used:

> *"To meet the carbon constraint, wind and solar provide over 60% of electricity generation by 2030; with gas generation providing around 25%. Figure 4 describes the capacity and generation mixes in 2030 in the High Renewables scenario. The capacity mix includes 56 GW of wind, 41 GW of solar, 27 GW of gas, 4.5 GW of nuclear and 2 GW of hydro. The capacity mix also includes 37 GW of security margin plant, which are not expected to run during normal operation of the electricity system, but are needed to address extreme stress events, in which multiple challenging conditions occur simultaneously."*

3.30 The report has therefore identified a need for 27GW of gas capacity to be operational in 2030. The report states that this 27 GW of capacity will be delivered by existing gas capacity currently on the system and hence no new build of new gas plant. This in itself is counter to the position adopted by ClientEarth that consented gas plant should be viewed as installed capacity, whereas the report assumes that existing gas plant will continue to operate beyond 2030, well beyond the design horizons of these plant.

3.31 Bearing in mind that older gas plant will be less efficient and more polluting than new gas plant, it would seem somewhat odd to argue that extending the lifetime of older, less efficient and more carbon intensive existing plant is a better option than replacing this capacity with low carbon, more efficient plant; this position is emphasised by the scenario modelling assuming a 40% load factor for gas plant.

3.32 A key aspect which is not dealt with within the Vivid Economics report is the strategic location required for plant within the network to maintain inertia as well as other system services. Generating a single number of 20GW of thermal generation capacity oversimplifies the complexity of managing the grid, specifically in a scenario which involves high renewables penetration. The importance of strategic location of plant within the network is discussed immediately below in relation to Boundary area B7a.

3.33 As explained above, the Proposed Scheme makes a significant contribution in terms of the system services and grid security it can provide, which cannot be otherwise provided by intermittent renewable sources. It provides these services with greater efficiency than the plant it will displace, so the services are provided more affordably and with a lower carbon intensity than would otherwise be the case. The Proposed

Scheme's contribution in this respect is of particular importance, due to its location within Boundary B7a. Due to the volatility of varying power flows caused by intermittent renewables (particularly within the area of Boundary B7a) there is a requirement for access to reactive power to promote safe, efficient and economic power. The importance of the Proposed Scheme in this respect is explained further below.

3.34 In order to assess and understand existing and future constraints and requirements across the national electricity transmission network, National Grid as the Electricity System Operator has divided the UK into a number of regional 'boundaries'. Across the North of England there are three transmission regions including Boundary B7a (in which Drax Power Station is located). At times of high wind generation the power flow will mostly be from north to south, since there is a large amount of wind generation in Scotland and the locations of demand are in the south of the UK. When most of this area and Scotland is generating power from renewables, transmission capability (i.e. the capability to transfer electricity safely, efficiently and therefore economically from the renewable plant where it is generated to where it is needed) can be very limited, as those transfer requirements are required to be met by fossil fuel generation (such as the Proposed Scheme) rather than renewables, in order to provide large values of reactive power, inertia and short circuit infeed for system stability and fundamental system requirements; these requirements cannot be relied upon fully from intermittent renewable generating technology. Furthermore, in the future a large amount of onshore and offshore wind connecting north of Boundary B7a will mean a continued requirement for reactive power, short circuit infeed and inertia in order to provide safe and efficient transfer of power. Given the large degree of wind capacity feeding in to Boundary B7a both now and in the future which the system operator will need to manage, there is also an important security requirement to ensure demand can still be met when the intermittent generation is not operational.

3.35 Boundary B7a also manages and contributes to power flows from south to north, when output from wind and solar generation in the north drops and electricity needs to be transferred northwards to address the shortfall. In the future, this transfer requirement will continue to grow as aging nuclear power stations and gas-fired power stations in the north are decommissioned.

3.36 As identified in National Grid's Ten Year Statement 2018[8] (Chapter 3 of which was provided at Appendix 4 to the Written Summary of Applicant's Oral Case at Issue Specific Hearing (Environmental Matters) (REP4-012)), there is a security requirement for Boundary B7a to maintain short circuit levels and inertia. Larger and more efficient flexible plant can maintain higher levels of inertia and short circuit infeed to assist in system security. Wind and solar generation do not contribute to inertia as they are decoupled from the transmission system. Chapter 3 of the Ten Year Statement in particular sets out the requirements for each boundary area including Boundary B7a. For Boundary B7a the Ten Year Statement shows an *increase* in the security requirements and boundary transfer capability for a high renewable penetration in a two degrees scenario (that is, the scenario to meet UK carbon budgets). This increase is from 8.7GW currently to above 15GW in 2027. The security requirements are to offset South to North power flows that would be normally covered by intermittent wind generation in the North, whilst maintaining the regional demand requirements. As set out above, those security requirements and ensuring stability on the network are services that cannot be provided by intermittent renewables, and the demand for such requirements will give rise to the need for more efficient flexible thermal plants to cover the intermittency of renewables ("security required for transfer"). This will also result in additional requirements for reactive power (i.e. from thermal plants) promoting efficient power flows during volatile periods as they differ from summer to winter, and those plants will also add to inertia to arrest frequency deviations (System Concern) and short circuit infeed for system security (Local).

[8] https://www.nationalgrideso.com/sites/eso/files/documents/ETYS_2018_Document_v1.pdf

3.37 For these reasons, the Proposed Scheme would make a particularly significant contribution not just in terms of system services, but specifically due to its location in Boundary B7a.

3.38 We have set out earlier in this note how the "Stack" works and how it orders the cost of generation based on the SRMC. The Stack does not provide the security and balance requirements of the System Operator (i.e. National Grid). As a result, the System Operator will buy or sell power to achieve what it needs, be that generation/demand balance or ancillary services. The System Operator ("**SO**") will look to purchase these balancing and ancillary services from the cheapest provider and will effectively look at a real time cost Stack to achieve lowest cost. A "Stack" ordering system operates for those system services, however, the services required from the "SO Stack" (that is, the System Operator Stack, utilised for system services, rather than pure generation capacity Stack) is not based purely on the incremental cost of a MWhr, other generator dynamics and capabilities are equally as important, for example, start time, ramp rates, frequency response, reactive capability. The SO Stack is therefore much more mercurial and can change from one half hour to the next, which is not a flexibility that renewables can reliably offer.

3.39 For the SO Stack, if National Grid requires system services (such as grid stability, transfer requirements etc) it will call on thermal plants, as those plants offer the capabilities referred to above, whereas renewable sources cannot fulfil that role.

3.40 As explained above, in Boundary area B7a, where Drax Power Station is located, if there is a high penetration of renewable energy from the north and Scotland, this results in a large security requirement which has to be met from fossil fuel plants in the SO Stack (currently coal and other lower efficiency plants). The current projection of the total transfer requirement (i.e. the energy needed to transmit renewable energy around the system to where it is needed) for the boundary area in which Drax operates is around 16GW (see figure B7a.2 in the updated Ten Year Statement, November 2018), hence there are still significant levels of gas generation projected for 2030. Of course, this is just a projection for the transfer requirement, the level required could be higher but that would be for the market and the system to determine, not the planning system.

3.41 The Proposed Scheme's efficiency, flexibility to offer enhanced services, and its location would mean it sits high on the Stack and the SO Stack. The Proposed Scheme therefore makes a significant contribution to providing the system services required to support the transition to renewables, more efficiently than other fossil fuel plants.

3.42 In previous submissions, ClientEarth has referred to reports from Vivid Economics and Imperial College London, published in 2018. Drax's Proposed Scheme is based on meeting the requirements of the future energy scenarios as set out by the system operator. The reports from Imperial College and Vivid Economics rely on demand and not system support. Given this and the localised requirements for reactive power and short circuit, we do not consider that the reports adequately model the transfer of power that can be achieved both safely and economically as per the requirements of National Grid Security and Quality of Supply Standards (SQSS). A number of the assumptions which Imperial College and Vivid Economics must have made in their High Renewables Electricity System scenario would have had to rely on currently built less efficient thermal plant running in areas to support the above requirements. Levels of storage, current and proposed out to 2030 are significantly lower than would be required to allow the above scenario to be effective. To clarify, every megawatt of generation provided by wind and solar must be classed as intermittent and as such the services they may provide must also be considered intermittent.

3.43 The table below illustrates the properties of different technology groups, and their technical capability to support the stability of the transmission system.

Generation Source	Nuclear	Interconnector	Wind	Thermal (coal, gas & biomass)	Solar	Batteries
Flexible and controllable generation	Partial	Yes	Partial	Yes	No	Yes
Inertia	Yes	No	No	Yes	No	No
Dynamic Response	No	No	Partial	Yes	No	Yes
Reserve	No	Yes	Partial	Yes	No	Yes
Reactive power capability	Yes	Yes	Partial	Yes	No	Yes

3.44 In the absence of dispatchable thermal plant, National Grid would be reliant on storage solutions to support system balancing. However, current storage solutions can only deliver energy for a limited number of hours due to technical limits on the amount of power they can store, reducing their useful operation during protracted weather events spanning multiple days. Furthermore, current storage solutions remain expensive to scale. For example, the biomass domes at Drax Power Station can store 300,000 tonnes of sustainably-sourced compressed wood pellets – equivalent to 600 GWhs worth of electricity. Currently, batteries cost £350 per kWh, meaning at present prices it would cost £210 billion to replace the capacity of all four of our biomass domes using battery power.[9]

3.45 **Benefits to society and the economy**

3.46 The UK has decarbonised its power sector much faster than any other country in the world. The average carbon intensity of the UK's electricity has more than halved in the last decade, due to the rapid phase-out of coal power and growth of renewables[10]. This has already had demonstrable benefits for other sectors of the economy that are reliant on the electricity system. For example, analysis undertaken by Imperial College has shown that as the average carbon intensity of the power grid has reduced, so has the carbon intensity of using electric vehicles. In 2012, producing the electricity required to charge a Nissan Leaf would have created the equivalent of 97 grams of CO2 per kilometre driven[11]. As illustrated in figure 1 below, thanks to the rapid decarbonisation of the power sector in the intervening years, by summer 2017 this figure had reduced to as little as 32 grams of CO2 per kilometre. This also demonstrates why one cannot simply look at a power generator and say it will contribute x CO2 per Mwh, when the indirect benefits of generating electricity mean that another sector decarbonises.

[9] https://www.drax.com/technology/batteries-big-biomass-domes/
[10] https://www.drax.com/wp-content/uploads/2018/12/Energy-Revolution-Global-Outlook-Report-Final-Dec-2018-COP24.pdf
[11] http://electricinsights.co.uk/#/reports/report-2017-q2/detail/electric-cars-get-greener?_k=1yz8xk

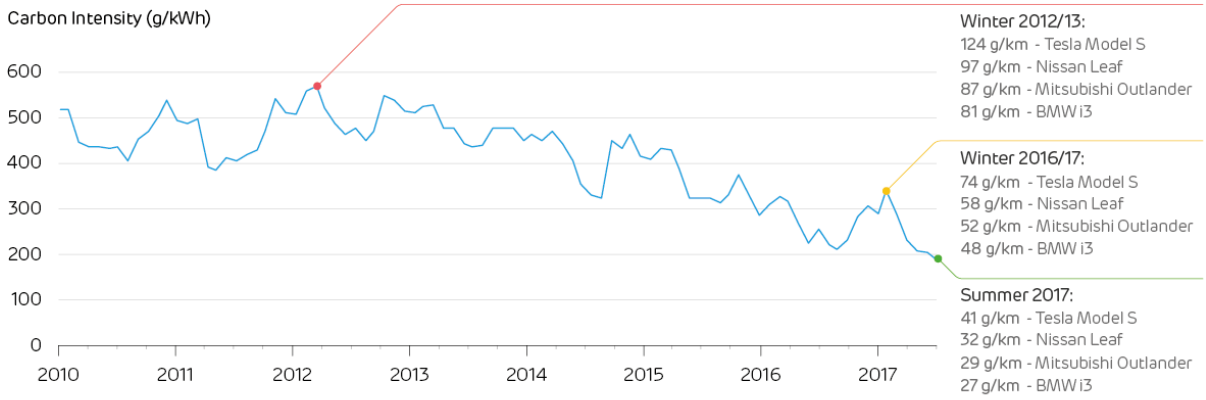


Figure 1: Carbon intensity of a selection of electric vehicle models, 2010-2017

3.47 It is vital that the UK builds on this success and continues to displace the least efficient and most carbon intensive forms of electricity generation, given that other sectors of the economy are expected to become increasingly reliant on electrification in the future. This is reflected in National Grid's Future Energy Scenarios[12], which show that across all four of its scenarios electricity demand is forecast to increase from today's levels due to:

(a) The electrification of transport sector, due to electric vehicles; and

(b) The gradual electrification of the heat sector, due to take-up of heat pumps.

3.48 Figure 2 below, from National Grid's Future Energy Scenarios illustrates how the UK could, over the coming decades, achieve the level of decarbonisation required under the Climate Change Act 2008. In many cases, these milestones are reliant on other sectors of the economy switching to electricity to reduce their carbon footprint. For example:

(a) 2020 sees 136,000 residential heat pumps installed nationally, typically replacing fossil fuel-based boilers, rising to 12 million homes by 2041;

(b) The 2030s see an increase in the production of hydrogen using low carbon electricity (a process known as electrolysis); and

[12] National Grid's Future Energy Scenarios (FES) (http://fes.nationalgrid.com/fes-document/), published annually, considers how the energy sector in the UK could evolve through to 2050 across four illustrative pathways, taking into consideration behaviour change from consumers and innovation in technology. These pathways are the product of in-depth analysis by a team of experienced analysts and are widely used as benchmark forecast scenarios by the rest of the energy industry. They are also rigorously tested, reviewed and developed with input from stakeholders across the energy sector to ensure they are robust, credible and reflect the changing energy landscape. 430 organisations were engaged with in the UK and Europe to inform the 2018 edition of FES.
The 2018 edition of FES features four scenarios aligned to two axes: 'speed of decarbonisation and 'level of decentralisation'. These scenarios are:

- Community Renewables: The UK's 2050 decarbonisation target is achieved through a decentralised energy landscape.
- Two Degrees: The UK's 2050 decarbonisation target is achieved using larger and more centralised technologies.
- Steady Progression: This scenario is more centralised and makes progress towards, but does not meet, the UK's 2050 decarbonisation target.

Consumer Evolution: This is a more decentralised scenario which makes progress towards but fails to meet the UK's 2050 decarbonisation target.

(c) 2038 sees 33 million electric vehicles on the road, displacing conventional combustion vehicles.

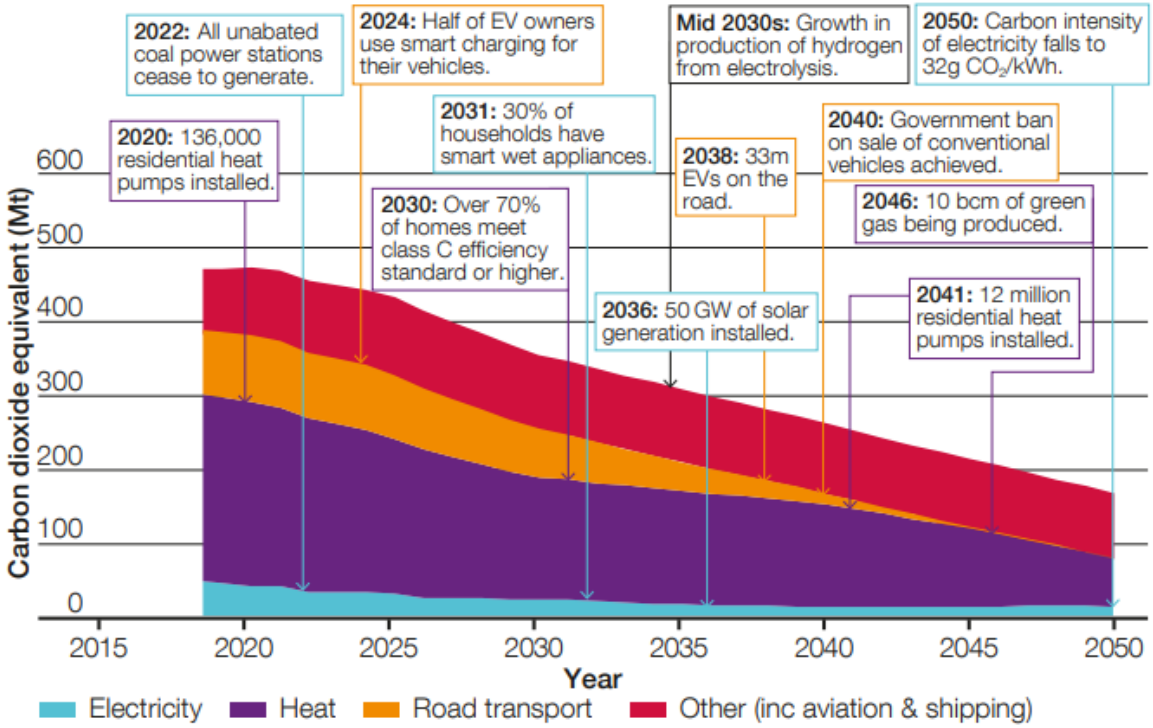


Figure 2: from National Grid's Future Energy Scenarios showing how the UK could achieve decarbonisation required by the Climate Change Act 2008.

3.49 The Proposed Scheme will provide a more efficient, less carbon intensive form of energy generation, which will displace existing less efficient, more carbon intensive generation, thereby contributing to the continued electrification of other sectors.

3.50 **Irrelevant considerations**

3.51 Projected capacity does not equate to need, and is therefore irrelevant to the consideration of the Proposed Scheme's actual contribution to the demonstrated need. There is a clear distinction between need and projected capacity / demand. As set out above, that established "need" arises from the requirement to:

(a) provide energy security and meet carbon reduction objectives (EN-1, paragraphs 3.3.2-3.3.6);

(b) to replace closing existing capacity (EN-1, paragraphs 3.3.7-3.3.9);

(c) to support renewable energy generation (and, for this reason, fossil fuel plants will still have a role even when the sector is almost entirely decarbonised) (EN-1, paragraphs 3.3.10-3.3.12); and

(d) to meet future increases in demand (in particular, from the electrification of sectors such as industry, heating and transport) (EN-1, paragraphs 3.3.13-3.3.14).

3.52 "Projected capacity" is a forecast. EN-1 makes it quite clear that these forecasts do not translate into targets. EN-1 sets out a clear approach which is that the Government (a) assumes need is demonstrated and (b) declines to set targets or limits for particular types of generation.

3.53 EN-1 also makes it quite clear at paragraph 3.3.18 that "*it is not possible to make an accurate prediction of the size and shape of demand for electricity*" in the future and that "*projections do not reflect a desired or preferred outcome for the Government in relation to the need for additional electricity generating capacity or the types of electricity generating capacity required*."

3.54 This is further supported by the Government's Clean Growth Strategy, October 2017 (the Executive Summary and the link to the whole document were provided as an appendix to Written Summary of Applicant's Oral Case at Issue Specific Hearing (Environmental Matters) (REP4-012)), which states at page 54 that "*we cannot predict the exact technological changes that will help us deliver on the fourth and fifth carbon budgets (and beyond)"* and "*To explore this uncertainty, we test different potential versions of the future based on current knowledge. These are not firm predictions of the future and should not be taken as sectoral targets*."

3.55 EN-1 is clear on the need for a major increase (double or triple) in electricity generation capacity by 2050 in order to enable the switching of industry, transport and building heating to electrical energy which will result in less GHG emissions (paragraph 3.3.14). As set out above, it is not the role of the planning system to set targets for or limits on different technologies, nor to deliver specific amounts of generating capacity for each technology type. In addition, no where in NPS EN-1 and NPS EN-2 is there a requirement on an applicant to carry out an energy need review exercise based on latest projections for its application in order to establish the "*anticipated extent*" of the actual contribution that the project in question would make to the need identified in EN-1 (as ClientEarth asserts should be carried out (paragraph 1.1.2 of its Deadline 4 submission, REP4-017)). For the ExA and the SoS to rely solely on projections would be erroneous given projections are not definitive of the future need. As NPS EN-1 quite clearly states at paragraph 3.3.24, "*It is not the [Secretary of State's] role to deliver specific amounts of generating capacity for each technology type. The Government has other mechanisms to influence the current delivery of a secure, low carbon, affordable electricity mix*." If the planning system were to set such targets or limits, then they would be inherently uncertain figures based on projections of what the country "may" need in electricity capacity over the next 25 or so years. Indeed, if policy were to set such a target or limit, there would be a real risk that insufficient capacity is available to be constructed, resulting in adverse effects on the economy, society and environment (perversely, it could result in a slow down in the decarbonisation of other sectors, given a lack of security of supply).

3.56 With respect to consented capacity, treating consented capacity as the need having been met has no basis in Government policy, makes no allowance for whether or not there is actual generation on the ground (which in the end is what matters), is inconsistent with an overarching approach that assumes need and with the clear policy approach that leaves to the market the delivery of the necessary infrastructure. Moreover, the Government does not surrender control once consent is granted. It has other controls such as taxation, emissions limits, and the capacity market by which it can control the capacity that is actually brought on line. Again, if the Government had wished decision makers to count consented but un-built capacity as satisfying need, it would have said so. Indeed, it would have had to say so explicitly given that such a position would be inconsistent with the market based approach.

3.57 ClientEarth's Deadline 4 submission asserts that it is reasonable to treat the government's energy generation projections as representing a "ceiling" or maximum level of need under EN-1 (paragraph 1.1.3 of REP-017). There is nothing in the energy NPSs cited as supporting that assertion, and the submission is put on the assumption that fossil fuel generation has been given a "relatively low priority", which, as set out above, is not Government policy. In any event, for the reasons given above, even if those projections were to be treated as the maximum level of need, consented capacity cannot be treated as satisfying that need, and it is not for the ExA nor the SoS to determine that sufficient capacity has been consented and that the need no longer exists for any further generation projects.

4. THE BENEFITS AND ADVERSE IMPACTS OF THE PROPOSED SCHEME

4.1 Benefits connected to generation

4.2 The generation-related benefits resulting from the Proposed Scheme have been considered in more detail above (in Section 3), in relation to the ways in which the Proposed Scheme would contribute to need. These are in summary –

(a) The Proposed Scheme will be able to deliver 3.6GW of high efficiency generation as well as store up to 200MW of electricity in its proposed battery storage capability facility. This generation and storage capacity clearly satisfies the identified need for new electricity generation, as set out in NPS EN-1;

(b) The Proposed Scheme contributes to the need to provide affordable energy in line with the Government's energy policy. It does this because of the efficiency gains associated with construction, but more importantly operational efficiencies, which will mean the Proposed Scheme displaces less efficient generation;

(c) The Proposed Scheme makes a significant and important contribution to need with respect to the security and resilience of electricity supply. The Proposed Scheme will provide system services which are essential to grid stability and security of supply and which cannot be provided by intermittent renewable sources. The Proposed Scheme would provide those services more efficiently (and at a lower carbon emissions intensity) than existing fossil fuel plants; and

(d) The Proposed Scheme would provide benefits to society and the economy by assisting with reducing the average carbon intensity of the UK's electricity and the continued decarbonisation of other sectors as they electrify. This in turn results in indirect benefits from the Proposed Scheme in relation to reduced greenhouse gas emissions in other sectors.

4.3 Non-generation related benefits

4.4 The non-generation benefits of the Proposed Scheme are:

(a) Societal and wider economic benefits due to grid stability (see NPS EN-1 paragraph 2.2.27) (see paragraph 3.16 and following in relation to how the Proposed Scheme contributes to that grid stability);

(b) The use of existing operational land - this minimises the use of greenfield land and compulsory acquisition of existing farm land. This also means there are fewer environmental impacts during construction and operation than a new power station might have on previously undeveloped land, or on land that does not have an existing electricity generating use;

(c) The use of existing infrastructure - the re-utilisation of as much existing infrastructure as possible (such as the existing cooling systems, cooling towers (which are more efficient than any alternatives that could be newly constructed elsewhere) and steam turbines at Drax Power Station) avoids such infrastructure potentially becoming redundant despite remaining within its operating life and being capable of contributing to more efficient

energy production and a lower carbon footprint (given it is already constructed);

(d) Support to the local economy by providing significant employment opportunities during the construction works, which would generate approximately direct 1,200 full-time equivalent (FTE) / jobs per year as well as approximately 600 FTE indirect and induced jobs; and

(e) Net gain for biodiversity for area based habitats (5%) and linear habitats (6%) following implementation of a Landscape and Biodiversity Strategy (see Outline Landscape and Biodiversity Strategy REP2-026, and Biodiversity Net Gain Assessment REP2-023). Following construction, measures in the Landscape and Biodiversity Strategy would aim to deliver a further gain for biodiversity of habitats by restoring these within the footprint of the Proposed Scheme where possible.

4.5 **Impact of the Proposed Scheme on greenhouse gas emissions**

4.6 The Proposed Scheme would result in an increase in GHG emissions of 90% at the Drax site, which is a direct, significant adverse effect. However, it is overly simplistic to look at that effect on its own. The Proposed Scheme also delivers a 173% increase in capacity. The Proposed Scheme has indirect benefits on GHG emissions given it would (1) displace less efficient, higher GHG producing generating plant (see paragraph 3.5 and following under the heading of Affordability), and (2) facilitate decarbonisation and hence lower GHG emissions in other sectors due to electrification (see paragraph 3.45 and following under the heading of Benefits to society and the economy). By supplying new electricity generation from gas rather than coal, by providing security of supply, by offering fast and flexible generation through battery and OCGT technology, the Proposed Scheme will help other sectors to switch to electrification. That benefit has to be taken into account.

4.7 It is not as simple as saying this one project will produce x amount of GHG emissions, when it will enable other areas to reduce GHG emissions that would otherwise not be able to be achieved due to a lack of installed capacity, lack of flexibility or lack of security of supply. The impact of the Proposed Scheme on GHG emissions and climate change needs to be considered on a national and global basis, rather than being focussed on this project or sector alone.

4.8 ClientEarth (see section 1.2.2 of its submission at Deadline 4) has sought to argue that with respect to the assessment of GHG emissions, an emissions intensity of 450gCO_2/kWh is misleading and does not reflect the likely evolution of circumstances in a situation where the Proposed Scheme did not go ahead. The Applicant's position is that the baseline assessed in its Environmental Statement reflects the realistic worst case scenario, because of the way in which the Stack (described in the section on Affordability at paragraph 3.5 and following) and SO Stack (described in the section on System Services at paragraph 3.16 and following) operate so that the Proposed Scheme would not displace or block renewable sources of energy, but instead displace less efficient forms of fossil fuel generation.

4.9 ClientEarth has suggested that the Proposed Scheme should compare its carbon intensity to the 2017 grid average (for all forms of generation) of 292g CO2 per kWh. This average includes carbon emissions from fossil plant (coal and gas), low carbon technology (nuclear) as well as controllable and intermittent renewables such as biomass, wind and solar; it also includes interconnectors and hydro generation. It is widely acknowledged that as greater renewable generation develops, the grid average will decrease further. However, there will always be periods of time when demand is high, output from wind and solar generation is low and dispatchable thermal generation will be required to meet demand and/or maintain the stability of the national

transmission system. This can be demonstrated by referring to data which shows the historical carbon intensity and indeed the technologies operating at that time. The figure below is for the second week of January 2018, a period when demand would be expected to be higher than average. The figure shows the generating technologies and the output in GW; note that the demand is peaking at around 45GW. The figure demonstrates that flexible plant such as gas (light blue) and coal (red) is meeting approximately 75% of the peak demand. On 10 and 11 January, there is a noticeable drop in onshore wind and a noticeable corresponding increase in the output from gas generation.

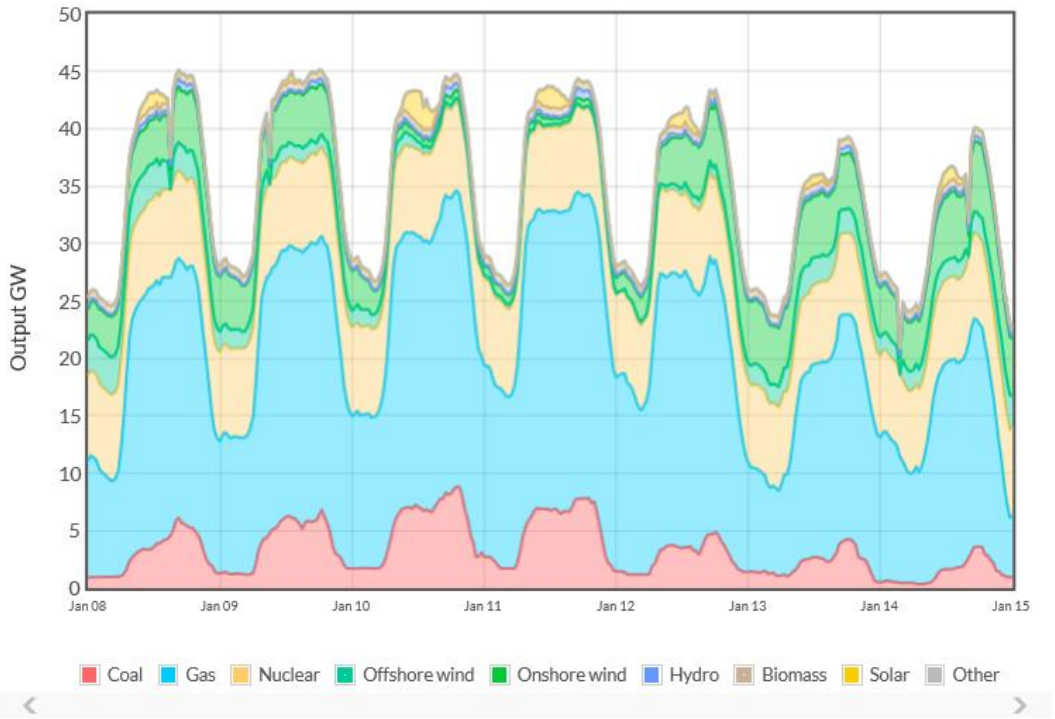


Figure 3 showing the output during January 8th – January 15th 2018

4.10 It is then important to consider how the average carbon intensity of the electricity system was impacted during this period. As a result of having increased coal generation on the system (with a typical carbon intensity of over 900g CO2/kWh) and older, less efficient gas generation on the system (typical carbon intensity 481g CO2/kWh), the average carbon intensity of the electricity system (i.e. of all forms of generation) rose to around 400g CO2/kWh on 10 January and over 450g CO2/kWh on 11 January. This is illustrated in the figure below.

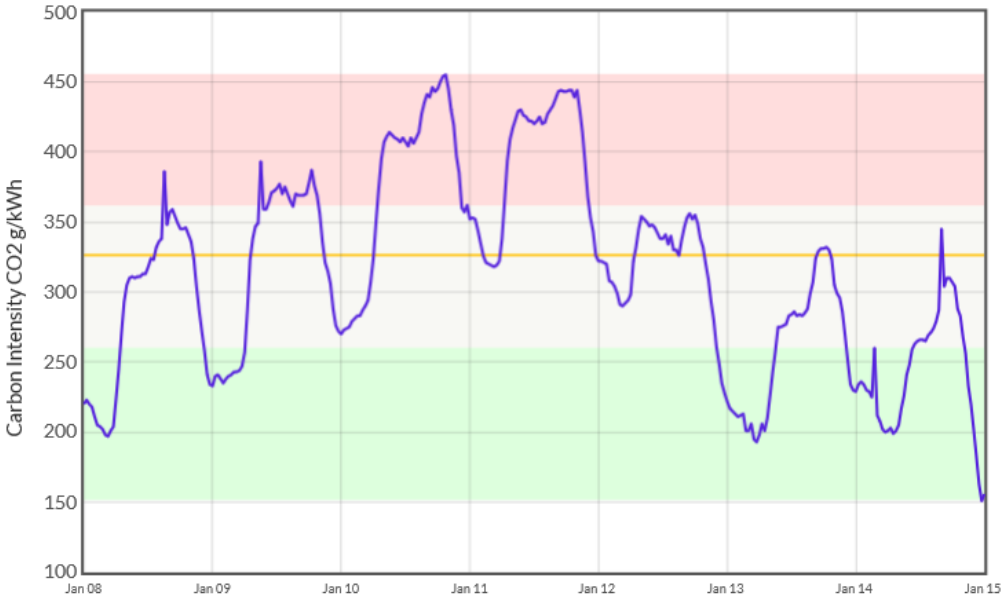


Figure 4 Showing carbon intensity associated with generation of electricity January 8th – January 15th, 2018.

4.11 This example, which is typical of the electricity system during the winter period when generation output from intermittent wind and solar can vary considerably, demonstrates that ClientEarth's proposal that the average grid carbon intensity across the entirety of 2017 (292g CO2/kWh) is an inappropriate benchmark as it does not accurately reflect the carbon intensity of the electricity system during the periods when the Proposed Scheme is most likely to run for extended periods of time or the carbon intensity of the less efficient technologies (aging coal and gas power stations) that the Proposed Scheme would displace within the stack.

4.12 The Environmental Statement Site and Project Description (APP-071) states that by "*the latter half of 2018, four units (Units 1-4) will run on biomass with only two units (Units 5 and 6) running on coal. This is assessed as the future baseline in this ES*." The Climate chapter (APP-083) considers possible scenarios after the emission limit for coal power generation falls to 450gCO_2/kWh in 2025, including the adaptation of Units 5 and 6 to meet this limit and replacement with generation elsewhere on the grid. Further detail on these scenarios is now provided below.

4.13 The selection of a carbon emissions intensity of 450gCO_2/kWh as the realistic worst case future baseline, is based on the two likely future scenarios of what would happen without the Proposed Scheme. These are as follows:

(a) Drax co-fires biomass to at least achieve a carbon intensity of 450gCO_2/kWh in line with government plans to end unabated coal combustion (the plans do not apply to gas with a carbon intensity of above 450gCO_2/kWh). This intensity is proven now as Drax has already achieved such co-firing at the Existing Power Station Complex. In addition, Drax is piloting a Carbon Capture Storage ("CCS") plant at one of its current units, and a carbon intensity of 450gCO_2/kWh could in the future be achieved through CCS in line with government plans to end unabated coal combustion, meaning that a carbon intensity of 450gCO_2/kWh could be achieved either by co-firing or through CCS. With or without CCS though, a carbon intensity of 450gCO_2/kWh is the likely evolution of the future

baseline without the Proposed Scheme, and therefore the realistic worst case.

(b) Drax shuts down coal fired Units 5 and 6, and the electricity that would have been produced by the Proposed Scheme, is instead produced by other generators on the grid at a carbon intensity of 450gCO_2/kWh (as explained below at paragraph 4.16).

Both likely scenarios result in a realistic worst case future baseline of 450gCO_2/kWh. As such, it does not matter which future scenario ends up taking place.

4.14 As outlined in previous submissions made by the Applicant to the Examining Authority (Applicant's Response to ClientEarth's Written Representation, para 4.14), co-firing of biomass on Units 5 and 6 is both technically and economically feasible, taking into consideration:

(a) The Applicant's proven track record of co-firing biomass at significant volumes at Drax Power Station since 2003 together with the infrastructure already available at Drax for biomass.

(b) The Government's stated position that co-firing biomass with coal at power stations is permitted beyond 1 October 2025 subject to achieving a carbon intensity limit no higher than 450g CO2/kWh.

(c) The commercial opportunities arising from continued operation of both generating units, considering the current and projected future need for thermal generation to support system stability in the region as outlined in the section on System Services, starting at paragraph 3.16; and

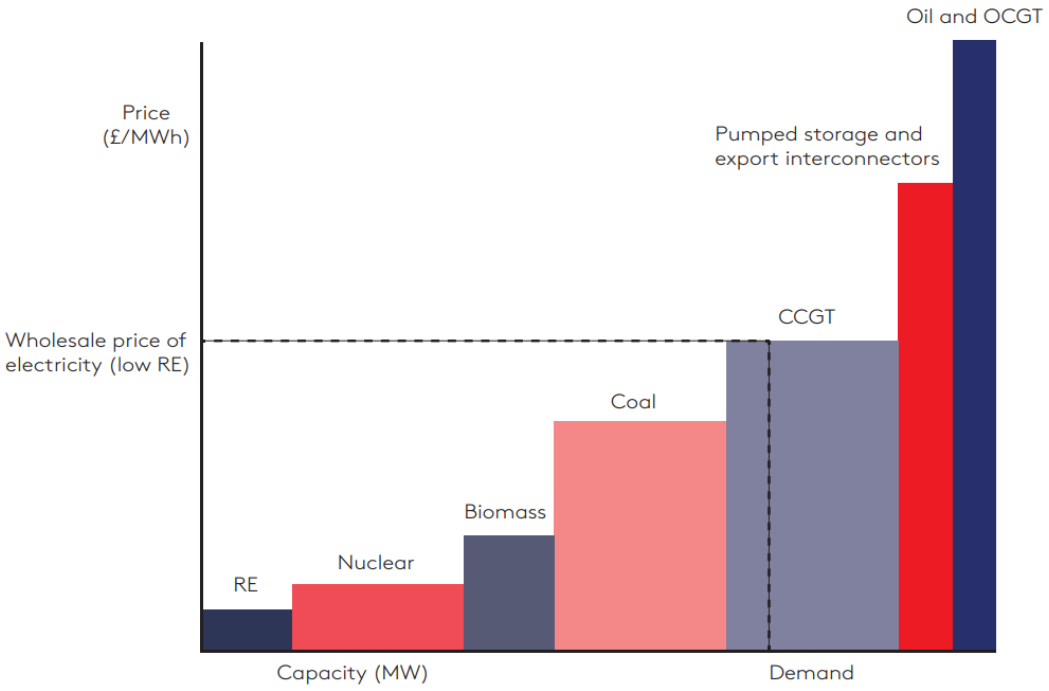
(d) The stated objective of the Applicant to continue to reduce its fuel costs between now and the mid-2020s, by implication further improving the economics of co-firing.

4.15 In addition, the Applicant is currently piloting a pilot project that will see Carbon Capture and Storage technology applied to one of its four existing biomass generating units. If the pilot proves successful, it will move the Applicant one step closer to successfully deploying CCS technology at Drax Power Station.

4.16 The use of 450gCO_2/kWh in scenario two is based on the fact that the electricity that would be produced by the Proposed Scheme and the services providing grid security and stability, would need to be provided elsewhere on the electricity grid if the Proposed Scheme was not constructed. This is because there is a need for the contribution the Proposed Scheme would make in terms of generation capacity, affordable electricity supply and system services (as set out above in Section 3), and therefore if that need is not met by the Proposed Scheme, it will need to be met by some other means. The realistic worst case future baseline is therefore based on the lowest carbon intensity form of electricity generation that would realistically produce the electricity and provide other system services if the Proposed Scheme did not exist.

4.17 In terms of just generation capacity, the selection of 450gCO_2/kWh as the carbon intensity for the realistic worst case future baseline is determined taking account of the operation of the 'Stack' (explain above in the section on Affordability at paragraph 3.5 and following), which are the assumptions made by market participants as to how National Grid prioritises available generation to dispatch electricity production capacity, based on the cost of generation (explained in the section on System Services at paragraph 3.16 as the Short Run Marginal Cost, SRMC). An illustrative schematic of a stack is presented below (Curran P, Fankhauser S, Gross R, Matikainen S and Ward B (2017) Some key issues for reviews of the costs of low-carbon electricity generation in the UK. London: Grantham Research Institute on

Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science). Note that this figure is stylised and has been provided only to demonstrate visually the operation of a stack (or Merit Order, as it is termed in the source report) and does not take into account the different efficiencies between within a type of technology, such as CCGT. Furthermore, beyond 2025 the Stack in the case of the Proposed Scheme would be slightly different in that abated coal would sit towards the end of the stack rather than the position shown in this schematic, for the reasons explained in this section of the paper.



4.18 Because of the way the 'Stack' operates, competition between different electricity generation operators leads to the most efficient operators (i.e. those with the lowest operating costs), bidding lowest and therefore being most likely to be dispatched first by National Grid. This is because National Grid prioritises the running plant for the lowest possible cost.

4.19 Renewable sources of electricity (including battery storage of renewable electricity) do not have fuel costs, and as such have the lowest operating costs. As presented in the schematic above, other low carbon sources of energy (including nuclear and biomass, also have low costs). This means that these sources of electricity are dispatched by National Gird first, if they are available (i.e. the sun is shining or wind blowing), because these sources will have the lowest operating costs.

4.20 High efficiency gas plant (such as the Proposed Scheme), has the next lowest operating costs, as the cost of gas is relatively low, and high efficiency plants require less gas than low efficiency plants to generate each unit of electricity. Such plant would be dispatched when renewable sources are not available, or when additional generation capacity is required. The next cheapest plant type to operate is low efficiency gas plant (Low efficiency CCGT and Open Cycle Gas Turbines (OCGT)). This is followed by oil plant (because oil prices are higher than gas prices, and are expected to remain so). Finally, post 2025, abated coal plants are likely to have the highest operating costs, due to the likely cost of abatement.

4.21 This means that as National Grid responds to demand for electricity, renewable electricity (where possible based on whether its fuel source is available) is dispatched before high efficiency gas plant such as the Proposed Scheme. In other words, the Proposed Scheme would not displace renewable electricity generation.

4.22 However, the Proposed Scheme will displace electricity produced by sources further down the Stack (energy that costs more to produce, i.e. low efficiency gas, oil and coal). This is because if the Proposed Scheme did not exist, National Grid would need to dispatch other available plant. This plant would be further down the Stack, and therefore less efficient, than the Proposed Scheme because by the time National Grid needs to dispatch the Proposed Scheme to meet demand, National Grid will have already dispatched all the plant above the Proposed Scheme in the Stack (where National Grid just needs electricity).

4.23 This means when determining the realistic worst case future baseline, emissions from plant below the Proposed Scheme in the Stack should be used (gas, oil and coal).

4.24 In addition, the Proposed Scheme would also provide essential system services for the grid. As outlined in the section commencing at paragraph 3.16 in relation to system services and the "SO Stack" (that is, the System Operator Stack which is concerned not solely with the cost of generation but the ability to provide services needed for the security and stability of the grid), these system services cannot be provided by renewables (for the reasons set out at paragraph 3.16 and following), and as such when the Proposed Scheme is dispatched by National Grid to provide these system services, the Proposed Scheme is not displacing renewables, but other (less efficient) fossil fuel plant (which are capable of providing system services) below the Proposed Scheme in the Stack.

4.25 The Proposed Scheme's likely contribution to the need for fossil fuel generation and its efficiency are highly relevant to informing the future baseline. As explained in the section on Affordability at paragraph 3.5 and following, the Proposed Scheme is likely to be the most efficient gas plant, ahead of all other gas plants that are currently on the system or which have been consented to date. This is because the plant re-uses Drax's cooling towers, which provide the most efficient type of cooling system available. It follows that generation capacity and system services provided by the Proposed Scheme would be provided by less efficient fossil fuel plant, at a higher carbon intensity, in the absence of the Proposed Scheme.

4.26 In line with government plans to end unabated coal combustion, the carbon intensity of coal plant will have to be at 450gCO2/kWh; this is the realistic worst-case future baseline for remaining thermal plant. The carbon intensity of oil plant is the highest of large-scale generating plant, higher than the carbon intensity of gas plant (or abated coal) because there is more carbon per unit of energy in oil than in gas. The most efficient type of gas plant is Combined Cycle Gas Turbines (CCGT). This is the technology that will be used for the Proposed Scheme. It is possible to quantify the carbon intensity of the CCGT plant that ran in the UK during 2017. This has been achieved using the same method as presented in the Environmental Statement, and using Government data on the average efficiency of CCGT plant in the UK[13]. This results in a carbon intensity of 481gCO2/kWh – significantly higher than the 450gCO2/kWh selected as the realistic worse case future baseline, for units 5 & 6 using co-firing technology.

4.27 This demonstrates that the electricity that would be generated if the Proposed Scheme did not exist, would be generated by lower efficiency gas, abated coal or oil. It would, therefore, have to be produced at a carbon intensity of 450gCO_2/kWh. As such the selection of 450gCO_2/kWh as the carbon intensity for the realistic worse case future baseline is considered robust.

[13] https://www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes

4.28 As demonstrated above, both scenarios present a realistic worst case future baseline. As detailed, this is because the Proposed Scheme will not displace renewable electricity generation. As such ClientEarth's argument that the baseline should use the average emissions intensity of all electricity produced over a year, including the electricity produced by renewables, would not be a realistic future baseline.

4.29 It is appropriate to use 450gCO2/kWh as a future baseline because the emissions intensity of both potential future scenarios has been determined. However, it is not possible to determine what the operational hours of the Proposed Scheme will be. This is because the operational hours will be determined by weather conditions, capacity demand and the demand for system services. These variables are highly uncertain, and as such allocating a specific load factor would not be appropriate. In addition, the Application does not propose a restriction on operational hours. Therefore, a worst-case load factor of 100% was assumed (the higher the load factor the higher the emissions). In practice, total GHG emissions would scale approximately in proportion to the load factor.

4.30 **Carbon capture storage as mitigation**

4.31 CCS is not being proposed as part of the Proposed Scheme, and therefore cannot be mitigation. However, the Proposed Scheme is CCR – Carbon Capture Ready. CCR is a policy requirement set out in EN-1 paragraph 3.6.6, and EN-2 paragraphs 2.3.4 and 2.3.5 - a new fossil fuel generating station above 300MW can only be consented if it is CCR. The Government is therefore planning for the future through this policy requirement. This means that the Proposed Scheme will be able to deploy CCS when it becomes feasible to do so and subject to obtaining any necessary consents required at the time, and at that point CCS would be mitigating Units X and Y.

4.32 No weight can therefore be applied to this "future mitigation" as there is no absolute certainty in the consent that it will come forward, which is what is required for "mitigation." However, the Government, having ensured that this proposal and other plants like it will be CCR, can, when the technology is commercially available, require its use by, for example, lowering emissions levels for certain types of plant.

4.33 ClientEarth states that there is a need to mitigate the adverse effects of the Proposed Scheme and makes reference to the Applicant's Environmental Statement. The Environmental Statement states (in the Non-Technical Summary, APP-131 at paragraph 2.1.6) that "*where a significant adverse effect is predicted on one or more receptors, additional mitigation measures are identified, if possible, to avoid or reduce the effect identified, or to reduce the likelihood of occurrence*." However, mitigation for GHG emissions is not currently considered to be viable or practical (for the reasons set out in this section).

4.34 Further, the conclusion that the Proposed Scheme will have an adverse impact on climate does not accurately represent the findings of the climate assessment, as outlined in the Environmental Statement Chapter 15 (APP-083) and is an unsophisticated conclusion given the indirect benefits the Proposed Scheme would have on GHG emissions and its increased capacity (as explained in the section entitled Impact of the Proposed Scheme on greenhouse gas emissions starting at paragraph 4.5, and at paragraph 6.11 and following in relation to the application of section 104(4)-(6) of the PA 2008). As the Environmental Statement makes clear, "*In terms of the GHG emissions intensity per unit of electricity output, the Proposed Scheme is judged to provide a significant positive effect on climate compared with the baseline/do nothing scenario.*"

4.35 ClientEarth's position is that the DCO for the Proposed Scheme should include a requirement for CCS. The CCR requirement as proposed in the draft DCO by the Applicant is in accordance with Regulation 3(3) of the Carbon Capture Readiness (Electricity Generating Stations) Regulations 2013 and the Government's CCR Guidance (Carbon Capture Readiness (CCR): A Guidance Note for Section 36

Electricity Act 1989 Consent Applications) (which implements the relevant EU Directive).

4.36 Whilst the Government is committed to developing and funding CCS (as evidenced most recently by the first-ever summit of 50 international leaders to accelerate global rollout of innovative technology to reduce emissions and tackle climate change, hosted by the UK in Edinburgh in November 2018), CCS technology is new and has to go through testing and financial modelling, which is being undertaken at the moment. The Government's intention is to roll out CCS at scale in the 2030s. The emphasis in EN-1 is on bringing forward low carbon technology, however, the Government recognises the need for fossil fuel generation and supports it in the national policy statement (subject to it being CCR). It would be at odds with the urgent need for fossil fuel generation, as identified in the NPS EN-1, to impose a requirement which has the effect that fossil fuel generation was not delivered to meet that identified need. It would be wholly unreasonable to expect an Applicant to commit to a technology that is not yet proven to be feasible (in the short term). Government policy recognises this and has identified the way forward for decision makers: to ensure that plants are CCR. It would be to re-write national policy to go beyond the requirements of EN-1.

4.37 It would have been quite easy for the Government to say either it will not permit new fossil fuel generation plants or that any such plants would have to have CCS or to limit the amount to be consented to a specific level of capacity. It did none of these things and, indeed, states that the need for plants including fossil fuel generation ought to be assumed. Any criticism that the Proposed Scheme is not low carbon or not CCS, therefore, fails properly to reflect the national policy statements. The Government clearly views proposals such as this as necessary support in the move to a low carbon electricity sector.

4.38 ClientEarth tacitly accept that its proposed condition would be (a) effectively to re-write national policy and (b) thereby unreasonable in citing the Court of Appeal's decision in *British Railways Board v Secretary of State for the Environment* [1993] 3 PLR 125 as authority for the ability to impose a *Grampian* style condition even where there is no reasonable prospect of the condition being met (see ClientEarth's Deadline 4 submission, Paragraphs 40 – 41 and footnote 61).

4.39 The Court's judgment in *British Railways Board* refers to the tests for a condition set out in *Grampian Regional Council v Aberdeen District Council* (1984) 47 P. & C.R. 633, being (1) it must be imposed for a planning purpose; (2) it must fairly and reasonably relate to the development for which permission is being given; (3) it must be reasonable. In relation to the third test, the Court drew attention to the fact that the requirement that a condition be reasonable had evolved to mean (erroneously) that a condition which was reasonable and necessary on planning grounds but had no reasonable prospects of fulfilment could not be validly imposed. The correct interpretation of the third test is that a condition should not be allowed which is unreasonable in the *Wednesbury* sense.

4.40 Imposing the requirement proposed by ClientEarth would be unreasonable not simply because there is no reasonable prospect of the requirement being met (in the short term), but because to do so would be at odds with planning policy (in particular the urgent need for fossil fuel generation), and the relevant legislation and guidance for CCR, as set out above.

4.41 The Court of Appeal's decision in *British Railways Board* also confirmed that its conclusion "*did not mean that the planning authority, if it decided that the proposed development was in the public interest, was absolutely disentitled from taking into account the improbability of permission for it, if granted, being implemented. … But there was no absolute rule that the existence of difficulties, even if apparently insuperable, had to necessarily lead to refusal of planning permission for a desirable development.*" This is of particular relevance with respect to the Proposed Scheme, where there is an evidenced urgent need for the type of energy infrastructure it would

provide (which need is required to be given substantial weight, such is its importance), and the imposition of a requirement as proposed by ClientEarth would have the effect of thwarting the contribution of the Proposed Scheme to that need.

4.42 The Government has the means (such as by Written Ministerial Statements, or new legislation such as with respect to abated coal after 2025) to require CCS in the future. The Government can introduce legislation requiring that land safeguarded for CCR, is used to provide CCS by a certain date. The Government has the power for plants not complying with such legislation to be closed. The planning system is not the only tool available.

4.43 **Landscape and visual impacts**

4.44 The Applicant has addressed the test in the NPS for Fossil Fuel Electricity Generating Infrastructure (EN-2) paragraph 2.6.5, which states that: *"[i]t is not possible to eliminate the visual impacts associated with a fossil fuel generating station. Mitigation is therefore to reduce the visual intrusion of the buildings in the landscape and minimise impact on visual amenity as far as reasonably practicable.*"

4.45 In addressing the significant adverse landscape and visual effects, the effects are minimised as far as reasonably practicable (in accordance with NPS EN-1 and paragraphs 2.6.5 and 2.6.8 of NPS EN-2). The Applicant has proposed landscape mitigation through the Outline Landscape and Biodiversity Strategy and should the DCO be granted, the detailed Landscape and Biodiversity Strateg(ies) and accompanying plans would be implemented to respond to local landscape character and associated features and reduce the extent of visual effects on visual receptors relating to the AGIs and other infrastructure including the GRF/Compressor Building. Due to the scale and size of the Proposed Scheme it is not feasible to eliminate the localised visual effects on visual receptors and aesthetic, experience and perceptual effects on Landscape Character Areas and Types and the River Derwent ILA.

4.46 The landscape measures proposed by the Applicant are proportionate and sufficient to minimise the visual effects on Landscape Character Areas / Types and the Lower Derwent Locally Important Landscape Area to the extent reasonably practicable given the scale and nature of the Proposed Scheme and its visual context. The benefits of providing further mitigation would be disproportionately low (the significance of effect would not change) compared to the disbenefits (primarily land take of Best and Most Versatile agricultural land) associated with further mitigation. Accordingly, the Applicant considers that it has taken the necessary measures to minimise the effects of the Proposed Scheme on landscape and visual amenity as far as reasonably practicable as required by paragraphs 2.6.5 and 2.6.8 of EN-2.

4.47 Paragraph 2.6.10 of NPS EN-2 provides:

"*For the reason given in paragraph 2.6.5 above if, having regard to the considerations in respect of other impacts set out in EN-1 and this NPS, the [Secretary of State] is satisfied that the location is appropriate for the project, and that it has been designed sensitively (given the various siting, operational and other relevant constraints) to minimise harm to landscape and visual amenity, the visibility of a fossil fuel generating station should be given limited weight*."

4.48 The Applicant considers that in line with paragraph 2.6.10, the visibility of the Proposed Scheme can be given limited weight.

4.49 The Applicant's case in this respect is set out in more detail in the Applicant's document, Landscape and Visual Amenity Effects – Appropriateness of Proposed Mitigation (REP2-033).

4.50 **Other impacts**

4.51 Other adverse impacts resulting from the Proposed Scheme are as follows:

4.51.1 Socio-economics – whilst there are short term beneficial effects on the local and regional economy due to generation of construction employment, as noted above, a limited reduction in jobs is anticipated during the operational phase. The staff reductions during operation are anticipated to be as a result of natural reductions (e.g. due to retirement) and where possible, there would be redeployment. This impact is unlikely to be significant at the local or regional level, and should be given limited weight.

4.51.2 Traffic and transport – significant short term effects on vehicular delays and junction performance. These effects will be temporary, and are expected to occur for two months during the construction stage for Unit X and then Unit Y. These impacts can therefore be given limited weight.

4.51.3 Heritage - there would be a temporary, short-term adverse effect of minor significance to the setting of Drax Augustinian Priory resulting from the temporary construction laydown during the construction of Unit X and Unit Y. There would be a permanent, long-term adverse effect on the setting of the Priory of minor significance resulting from the impact of new built forms in the landscape (Units X and Y) during operation. There would be a temporary short-term adverse effect of minor significance to the setting of the Scurff Hall resulting from the construction of the Gas Pipeline and the associated Above Ground Installation. In the context of the National Planning Policy Framework (NPPF) (2018), effects of minor significance in the Historic Environment Chapter of the Environmental Statement (APP-076) equate to less than substantial harm. Therefore, the effects of the Proposed Scheme will result in less than substantial harm on designated heritage assets.

4.52 No likely significant residual effects have been identified for the following topics, and whilst the weight attributed to such considerations may be minimal, it is a positive impact of the Proposed Scheme that it is able to contribute so significantly in terms of electricity generation without significant adverse impacts for the following environmental topics:

(a) Air quality – no significant effects on air quality are predicted during the construction phase. The new plant operation at the Power Station Site is unlikely to have significant impacts on air quality affecting human health.

(b) Noise and vibration – no significant construction noise effects are predicted on sensitive receptors. The operational noise is not predicted to be significant following the implementation of mitigation measures such as acoustic attenuators.

(c) Historic environment – no significant permanent effects on below ground assets during construction are predicted, following the implementation of mitigation measures such as strip, map and record.

(d) Biodiversity – no significant effects on sites designated for their biodiversity importance are currently predicted during construction. No significant effects are predicted on protected species during the construction or operation of the Proposed Scheme. No significant effects on designated sites during operation are predicted both with and without the application of air quality abatement technologies. No significant effects on accidental spread of invasive species are predicted.

(e) Landscape and visual - operational effects of the gas pipeline are not predicted to be significant.

(f) Ground conditions and contamination – no significant short term or long term effects are predicted on soil, surface water and groundwater during construction, operation and decommissioning.

(g) Water resource, quality and hydrology - no significant long term effects are predicted on surface water and groundwater, and also in relation to flood risk during construction, operation and decommissioning.

(h) Waste – no significant short term effects are predicted as a result of waste generated during the construction phase.

(i) Major accidents and disasters – no significant effects associated with major accidents and disasters.

4.53 **Decommissioning risk**

4.54 ClientEarth asserts (at section 2.4 of its Deadline 4 submission) that there is a risk of costs being imposed on the public in the event the Proposed Scheme becomes uneconomic once built and therefore a "stranded asset". The Applicant does not consider there is any merit to this argument, and its position is that this is not a factor that should be given any weight by the ExA or the SoS.

4.55 If the Proposed Scheme is granted consent, the construction of the generating units would likely be subject to securing a 15-year Capacity Market agreement. Taking the assumptions in the Environmental Statement, Unit X would become combined cycle operational in 2022/23 and Unit Y would become combined cycle operational in 2027. This phasing in accordance with the Environmental Statement is the subject of a requirement included in the draft DCO submitted at Deadline 5. With these operational dates, then the respective Capacity Market agreements would run until the mid-to-late 2030s for Unit X and early 2040s for Unit Y. Forecasts from the Department for Business Energy and Industrial Strategy, the Committee on Climate Change and National Grid all show that some gas generation will be required during that time period to meet electricity demand and/or support the stability of the national electricity grid. As a result, the Applicant considers there is minimal public subsidy risk associated with the Proposed Scheme, given the forecast need for gas generation during the timeframe outlined above, and the need for the generation capacity, affordable energy, system services and grid security to which the Proposed Scheme makes a significant contribution.

4.56 Once operational, Units X and Y would be called on to generate electricity ahead of all other less efficient gas plant currently on the system or which have been consented to date, and which are hence more expensive to run (as explained above in relation to the operation of the generation capacity Stack at paragraph 3.5 and following under the heading Affordability). This provides the Proposed Scheme with a real and tangible economic advantage vs. other gas projects (constructed or consented) in the UK that further minimises any commercial risk associated with the project.

4.57 Regarding decommissioning risk, as outlined in the Applicant's Funding Statement, Drax will make provision for reinstatement to cover the estimated costs of decommissioning and demolishing its generation assets and remediating the site at the end of the useful economic lives of the assets.

5. COMPLIANCE WITH UK ENACTMENTS AND INTERNATIONAL OBLIGATIONS IN RELATION TO CLIMATE CHANGE

5.1 The UK is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) and its 'Paris Agreement' on international commitments to tackle the causes and effects of climate change. This commitment was made at the national level and the UK government is responsible for setting national policy and legislation in order to meet this commitment.

5.2 The Climate Change Act 2008 is the UK government's primary legislation seeking to tackle the causes and effects of climate change. Amongst other things, it commits the UK Government to achieving a 50% reduction in GHG emissions by 2050 and establishes the UK Carbon Budgets: the maximum GHG emissions which can be emitted at the national level for each five-year carbon budget period (currently legislated to 2032).

5.3 The international and national climate obligations do not specify the maximum GHG emissions which are allowable for particular sectors of the UK economy nor for individual projects or economic activities. This recognises the fact that different sectors and projects will need to contribute to emissions reductions in different ways.

5.4 The Committee on Climate Change has considered the likely risks to the UK achieving its carbon budgets (Reducing UK emissions 2018 Progress Report to Parliament, 2018), finding that "*legally binding carbon budgets will only be achieved if effective policy extends beyond waste and power, into sectors that have not so far achieved significant reductions*." Indeed, the Committee on Climate Change notes that "*reducing emissions from electricity generation is one of the simpler challenges for policy*." This confirms the position that the Proposed Scheme, which will reduce the average emissions intensity of UK electricity generation, will not adversely affect the UK's progress towards meeting the carbon budgets and will in fact contribute to that progress.

5.5 The overarching energy NPS EN-1 establishes the UK Government's policy for achieving multiple energy policy objectives, including energy security alongside the need for decarbonisation. The NPS was devised in the context of the Climate Change Act 2008 and to meet the carbon budget, and EN-1 expressly deals with climate change and the road to 2050. It is in that context that NPS EN-1 recognises the expectation of an increase in demand for electricity, including as a result of the need to decarbonise other sectors of the UK economy such as transport and building heating.

5.6 The effects of the Proposed Scheme were assessed in terms of the contribution to climate change (net GHG emissions) in both absolute (total) terms and relative (intensity) terms. However, the assessment does not consider the broader, indirect benefits which may result from switching other sectors of the economy to decarbonising. The future evolution of national GHG emissions will depend on Government policy across a range of sectors, including electricity generation, transport, construction and others. It is not within the scope of Environmental Impact Assessment for a single project to consider the cumulative effect of existing and future Government policies intended to ensure compliance with international obligations. This is addressed through the assessment of those policies and plans, such as the NPS. It is clear, however, that a single project, supported by the NPS, cannot in itself result in a breach of international obligations on GHG emissions.

5.7 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ("**EIA Regulations**") require the Environmental Impact Assessment ("**EIA**") to consider likely significant effects of the development on the environment taking into account the cumulation of the impact with the impact of other existing and/or approved development. A typical assessment of cumulative effects as is carried out for other environmental aspects is not practical or meaningful because of the global nature of

GHG emissions. The standard approach to cumulative assessment requires an assessment on a localised basis, identifying the Zone of Influence (in line with the Planning Inspectorate's Advice Note Seventeen), which is not feasible or possible for GHG emissions. The ES acknowledges this, saying "*this assessment is not able to take into account the potential for an indirect reduction in GHG emissions (at the wider National level) which may be enabled by the additional electricity generation capacity provided by the Proposed Scheme*."

5.8 Regarding transboundary effects, GHG emissions from the Proposed Scheme would not be likely to have significant effects on the environment in another EEA State. It is important to understand that the significance of effects in EIA is context specific. Effects can be significant locally or nationally, but insignificant when considered on an international or global scale. Transboundary screening has been undertaken twice by the Planning Inspectorate on behalf of the SoS for the purposes of regulation 32 of the EIA Regulations, most recently on 30 July 2018. The screening exercises have not identified any transboundary effects.

5.9 ClientEarth's Deadline 4 submission, at paragraph 31, asserts that cumulative effects are relevant to the issue of need under EN-1. The submission appears to conflate two separate issues; the correct approach to cumulative assessment and the regard that can be had to consented projects for the purposes of considering the Proposed Scheme's actual contribution to need pursuant to NPS EN-1. The approach to the assessment of cumulative effects is to assume that consented schemes will come forward. This is to ensure a realistic worst case scenario has been assessed. It does not follow from this approach to environmental impact assessment that the ExA and SoS should assume all consented schemes will be delivered, and the reasons why that is not a sound approach and why consented capacity is not relevant are addressed at the section on Irrelevant Considerations starting at paragraph 3.50. By way of example, neither Spalding extension (945MW) nor Gateway (1250 MW), both Intergen projects, did not pre-qualify for the 2022/23 auction, demonstrating that relying on consented projects to be built out risks security of supply. In addition, Hunterston Nuclear Power Station also failed to pre-qualify.

6. APPLICATION OF SECTION 104 OF THE PLANNING ACT 2008

6.1 Application of section 104(3)

6.2 Section 104(3) provides that the application must be decided in accordance with any relevant NPSs, except to the extent that one or more of subsections (4) to (8) applies. In section 5 of the Applicant's Planning Statement (APP-062), along with Table 2-1 to Appendix 2 to that document, the Applicant has considered and set out the conformity of the Proposed Scheme against the assessment principles, generic impacts and assessment and technology specific considerations of the relevant NPSs (EN-1, EN-2, EN-4 and EN-5). The Planning Statement demonstrates that there is no conflict with the NPS policy and that the Applicant has fully taken into account the guidance contained within the NPSs. None of the exceptions in subsections 104(4) to (8) applies, and the Proposed Scheme can therefore be approved in accordance with the relevant energy NPSs.

6.3 Application of section 104(7)

6.4 Section 104(7) provides an exception to deciding the application in accordance with section 104(3) where the SoS is satisfied that the adverse impact of the proposed development would outweigh its benefits. This sub-section therefore requires the ExA and the SoS to undertake a balancing exercise.

6.5 The weight given to each consideration, and the way in which those considerations are balanced against each other, is a matter for the discretion of the ExA and the SoS. However the Applicant has set out in this section how it considers the Proposed Scheme's impacts should be balanced.

6.6 As set out earlier in this note, applications should be assessed on the basis that the Government has demonstrated that there is a need for those types of infrastructure covered by the energy NPSs (NPS EN-2 covers fossil fuel generating infrastructure). Substantial weight should be given to the contribution that projects would make towards satisfying this need (EN-1, Paragraph 3.1.4). The weight which is attributed to considerations of need in any given case should be proportionate to the anticipated extent of a project's actual contribution to satisfying the need for a particular type of infrastructure (EN-1, Paragraph 3.2.3).

6.7 The Proposed Scheme makes a significant contribution towards satisfying the various aspects of the need identified for fossil fuel generating infrastructure in the Energy NPSs. The factors to be taken into account in determining the project's actual contribution to need are discussed above in Section 3, and in summary are:

(a) Generation capacity - The Proposed Scheme will be able to deliver 3.6GW of high efficiency generation as well as store up to 200MW of electricity in its proposed battery storage capability facility. This generation and storage capacity clearly satisfies the identified need for new electricity generation, as set out in NPS EN-1;

(b) Affordable electricity - The Proposed Scheme contributes to the need to provide affordable energy in line with the Government's energy policy. It does this because of the efficiency gains associated with construction, but more importantly operational efficiencies, which will mean the Proposed Scheme displaces less efficient generation;

(c) System services - The Proposed Scheme makes a significant and important contribution to need with respect to the security and resilience of electricity supply. The Proposed Scheme will provide system services which are essential to grid stability and security of supply and which cannot be provided by intermittent renewable sources. The Proposed Scheme would provide those services more efficiently (and at a lower carbon emissions intensity) than existing fossil fuel plants; and

(d) Benefits to society and the economy - The Proposed Scheme would provide benefits to society and the economy by assisting with reducing the average carbon intensity of the UK's electricity and the continued decarbonisation of other sectors as they electrify. This in turn results in indirect benefits from the Proposed Scheme in relation to reduced greenhouse gas emissions in other sectors.

6.8 The important and sizeable contribution the Proposed Scheme would make to a range of factors justifies giving a high degree or category of substantial weight to the satisfaction of the need identified in NPS EN-1.

6.9 That high degree of substantial weight is required to be balanced with:

(a) Benefits which should be given weight:

(i) Societal and wider economic benefits due to grid stability (see NPS EN-1 paragraph 2.2.27);

(ii) The use of existing operational land - this minimises the use of greenfield land and compulsory acquisition of existing farm land. This also means there are fewer environmental impacts during construction and operation than a new power station might have on previously

undeveloped land, or on land that does not have an existing electricity generating use;

(iii) The use of existing infrastructure - the re-utilisation of as much existing infrastructure as possible (such as the existing cooling systems, cooling towers (which are more efficient than any alternatives that could be newly constructed elsewhere) and steam turbines at Drax Power Station) avoids such infrastructure potentially becoming redundant despite remaining within its operating life and being capable of contributing to more efficient energy production and a lower carbon footprint (given it is already constructed);

(iv) Support to the local economy by providing significant employment opportunities during the construction works, which would generate approximately direct 1,200 full-time equivalent (FTE) / jobs per year as well as approximately 600 FTE indirect and induced jobs;

(v) Net gain for biodiversity for area based habitats (5%) and linear habitats (6%) following implementation of a Landscape and Biodiversity Strategy (see Outline Landscape and Biodiversity Strategy REP2-026, and Biodiversity Net Gain Assessment REP2-023). Following construction, measures in the Landscape and Biodiversity Strategy would aim to deliver a further gain for biodiversity of habitats by restoring these within the footprint of the Proposed Scheme where possible; and

(vi) That the Proposed Scheme is able to contribute so significantly in terms of electricity generation without significant adverse impacts for various environmental topics as set out at paragraph 4.52.

(b) Adverse effects which should be given limited weight:

(i) GHG emissions – The Proposed Scheme would result in an increase in GHG emissions of 90%, which is a direct, significant adverse effect. However, it is important to take into account (as has been noted above in relation to benefits of the Proposed Scheme) that the Proposed Scheme also delivers a 173% increase in capacity and has indirect benefits on GHG emissions given it would (1) displace less efficient, higher GHG producing generating plant, and (2) facilitate decarbonisation and hence lower GHG emissions in other sectors due to electrification. However, the Proposed Scheme is Carbon Capture Ready, and therefore compliant with the requirement set out in EN-1 paragraph 3.6.6, and EN-2, paragraphs 2.3.4 and 2.3.5.

(ii) Landscape and visual effects – The landscape measures proposed by the Applicant are proportionate and sufficient to minimise the visual effects on Landscape Character Areas / Types and the Lower Derwent Locally Important Landscape Area to the extent reasonably practicable given the scale and nature of the Proposed Scheme and its visual context. The benefits of providing further mitigation would be disproportionately low (the

significance of effect would not change) compared to the disbenefits (primarily land take of Best and Most Versatile agricultural land) associated with further mitigation. Accordingly, the Applicant considers that it has taken the necessary measures to minimise the effects of the Proposed Scheme on landscape and visual amenity as far as reasonably practicable as required by paragraphs, 2.6.5 and 2.6.8 of EN-2. Accordingly, the visibility of the Proposed Scheme can be given limited weight pursuant to paragraph 2.6.10 of NPS EN-2.

(iii) Socio economic – A limited reduction in jobs is anticipated during the operational phase. The staff reductions during operation are anticipated to be as a result of natural reductions (e.g. due to retirement) and where possible, there would be redeployment. This impact is unlikely to be significant at the local or regional level, and should be given limited weight.

(iv) Traffic and transport – There may be significant short term effects on vehicular delays and junction performance. These effects will be temporary, and are expected to occur for two months during the construction stage for Unit X and then Unit Y. These impacts can therefore be given limited weight.

(v) Heritage - There would be a temporary, short-term adverse effect of minor significance to the setting of Drax Augustinian Priory resulting from the temporary construction laydown during the construction of Unit X and Unit Y. There would be a permanent, long-term adverse effect on the setting of the Priory of minor significance resulting from the impact of new built forms in the landscape (Units X and Y) during operation. There would be a temporary short-term adverse effect of minor significance to the setting of the Scurff Hall resulting from the construction of the Gas Pipeline and the associated Above Ground Installation. In the context of the NPPF, effects of minor significance in the Historic Environment Chapter of the Environmental Statement (APP-076) equate to less than substantial harm. Therefore, the effects of the Proposed Scheme will result in less than substantial harm on designated heritage assets. Given the small and largely temporary degree of harm caused to heritage assets, the Applicant considers that the public benefits of the Proposed Scheme outweigh that harm (in accordance with NPS EN-1, paragraph 5.8.15) and it can accordingly be given limited weight.

6.10 The Applicant considers that the high category of substantial weight that should be given to the anticipated extent of the Proposed Scheme's actual contribution to satisfying the demonstrated need (as well as the other beneficial impacts of the Proposed Scheme) is not outweighed by the above adverse impacts.

6.11 **Application of section 104(4)-(6)**

6.12 **With respect to section 104(4)**, deciding the Application in accordance with the relevant NPSs would not lead to the UK being in breach of any of its international obligations.

6.13 Paragraph 19 of ClientEarth's Deadline 4 submission states that the relevant question is whether "*deciding the application in accordance with the NPS*" would lead to an exception being triggered, and the Applicant agrees with this interpretation.

6.14 The Applicant's position, as set out above with respect to section 104(3), is that deciding the Application in accordance with the energy NPSs would require the SoS to approve the Application for the Proposed Scheme and make the DCO in line with the draft currently provided by the Applicant.

6.15 The NPS was devised in the context of the Climate Change Act 2008 and to meet the carbon budget; EN-1 expressly deals with climate change and the road to 2050 (at the time the NPS took effect the goal for the global average temperature was that it must be kept to no more than 2°C). The Proposed Scheme meets those policy requirements, and deciding the application in accordance with the NPS and granting permission for the Application will therefore not contravene the UK's climate obligations and other enactments.

6.16 In addition, in any determination, whether for an energy project, airport, or road scheme for example, the ExA and the SoS are also required to expressly consider the international obligations which have come into effect (in this case since the NPSs were designated).

6.17 The Paris Agreement (ratified by the UK on 18 November 2016) provides in Article 2(1)(a) (the section of the Paris Agreement expressly cited by ClientEarth) that:

> "*This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by*:
>
> *(a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change*;"

6.18 Article 2(1) sets out other means by which to achieve the stated aim of the Paris Agreement in relation to climate resilience and finance flows being consistent with a pathway towards low GHG emissions and climate resilient development.

6.19 Article 3 requires parties to the Paris Agreement to undertake and communicate ambitious efforts (as set out in Articles 4, 7, 9, 10, 11 and 13 of the Paris Agreement) to achieve the purpose set out in Article 2.

6.20 Deciding the Application in accordance with the Energy NPSs cannot be said to bring the UK in breach of its international obligations under the Paris Agreement as ClientEarth suggests. To deliver the Paris Agreement, including limiting the global average temperature increase to well below 2°C, the Government has already embarked on various initiatives, including improving national carbon reduction strategies, advancing innovation to drive forward clean energy on a global scale, increasing transparency of actions and scaling up ambitious climate finance from a range of public and private sources to avoid the most devastating effects of global warming. If the SoS thought the Paris Agreement was a significant change that warranted a review of the energy NPSs, then he has the power to review the NPS under section 6 of the PA 2008. He has not done so. Indeed, since the Paris Agreement, the SoS has issued a Written Ministerial Statement that re-affirms the policy in the energy NPSs, as referred to in paragraph 2.12.2 above.

6.21 The Government's approach to meeting the Paris Agreement climate goals (by introducing the various measures set out above, but not amending the NPSs or seeking to restrict gas fired generation) is consistent with the Government's energy

policy more widely, which is not just about decarbonising the power sector, but delivering on increasing electricity generation given demand for electricity will increase as the UK decarbonises and providing security of that supply in electricity to help the UK decarbonise across sectors (as provided by the energy NPSs). The urgent need for energy generation by all types of infrastructure as provided by the energy NPSs is entirely consistent with the UK's international climate obligations, and the NPS has been deliberately prepared for that purpose, in order to support the reduction in GHG emissions across other sectors to help the UK meet its obligations.

6.22 In any event, it is not possible to determine that a decision to approve one project will put the UK in breach of its climate change obligations (internationally and nationally) at an economy wide level. Such an approach would set a dangerous precedent for all other NSIPs (or any development) producing GHG and fails to take into account the indirect benefits from new, more efficient energy generation displacing existing less efficient and higher GHG emitting sources of energy as well as from supporting electrification of other sectors. It is clear from NPS EN-1 and the Government's approach to how it has implemented its climate change obligations (for example, with national carbon budgets) that dealing with climate change on a project by project basis is a short sighted, unsophisticated approach, which fails to have regard to the global nature of GHG emissions, the economy wide budgets and obligations, and the indirect carbon reduction benefits of single project.

6.23 This exception is therefore not triggered by deciding the Application in accordance with the relevant NPSs.

6.24 **Sub-sections 104(5) and (6)** provide exceptions where deciding the application in accordance with the relevant NPSs would lead to the SoS being in breach of any duty imposed on the SoS by or under an enactment, or would be unlawful by virtue of any enactment.

6.25 Whilst relevant to sub-section (4) as the Climate Change Act 2008 implements international obligations, a consideration of that enactment will also be relevant for the purposes of sub-sections (5) and (6). As noted above, the energy NPSs have been prepared having regard to the Climate Change Act 2008 and the carbon targets. Paragraph 2.5.2 of EN-2 states: "*CO2 emissions are a significant adverse impact of fossil fuel generating stations. Although an ES on air emissions will include an assessment of CO2 emissions, the policies set out in Section 2.2 of EN-1 will apply, including the EU ETS. The [Secretary of State] does not, therefore need to assess individual applications in terms of carbon emissions against carbon budgets and this section does not address CO2 emissions or any Emissions Performance Standard that may apply to plant*." Section 2.2 of EN-1 describes how policy supporting new energy generation capacity sits alongside the UK's climate change obligations. In short, the need for fossil fuel generating stations is identified in the context of, and with the aim of, meeting the legally binding target contained in the Climate Change Act 2008 to cut greenhouse gas emissions by at least 80% by 2050 as compared to 1990 levels. The exceptions in sub-sections (5) and (6) are not triggered as deciding the Application in accordance with the relevant NPSs, which are consistent with the Climate Change Act, would not be unlawful nor lead to the SoS being in breach of any duty imposed by or under an enactment.

6.26 ClientEarth asserts at paragraph 21 that it is the Applicant's position that the NPS prevents the decision maker from taking into account cumulative and transboundary climate effects of the Proposed Scheme, and that this would therefore trigger the exceptions under sub-sections 104(5) and (6) as a decision in accordance with the NPSs would be in conflict with the EIA Regulations. The assertion from ClientEarth in relation to the Applicant's position on cumulative and transboundary climate effects conflates the provisions of the EIA Regulations and the requirements for the UK to meet certain climate budgets pursuant to the Climate Change Act 2008. As set out by the Applicant in its Written Summary of Applicant's Oral Case at Issue Specific Hearing (Environmental Matters) (REP4-012), NPS EN-1 (paragraph 5.2.2) provides

that "*The [SoS] does not, therefore need to assess individual applications in terms of carbon emissions against carbon budgets*". Assessing the Proposed Scheme's emissions against carbon budgets is different from cumulative and transboundary assessments required pursuant to the EIA Regulations.

6.27 With respect to the requirement to carry out a cumulative assessment, such an assessment is not practical or meaningful because of the global nature of GHG emissions, as explained above in Section 5. The cumulative effects are controlled in any event at a national policy level, rather than on a project by project basis because of the global nature of the emissions (compared with more localised cumulative effects for other environmental aspects).

6.28 With respect to the assessment of transboundary effects, pursuant to regulation 32 of the EIA Regulations, the obligation is on the SoS to consider if the proposed development is likely to have significant effects on the environment in another EEA State, and to take various actions if it does. Transboundary screening has been undertaken twice by the Planning Inspectorate on behalf of the SoS for the purposes of regulation 32 of the EIA Regulations, most recently on 30 July 2018. The screening exercises have not identified any transboundary effects. The Application has been conducted entirely in accordance with the requirements of the EIA Regulations in relation to transboundary effects.

6.29 In any event, due to their global nature, climate effects from the Proposed Scheme are not properly considered to be transboundary effects for the purposes of the Espoo Convention, which defines transboundary impact as *"any impact, not exclusively of a global nature, within an area under the jurisdiction of a Party caused by a proposed activity the physical origin of which is situated wholly or in part within the area under the jurisdiction of another Party;".* The approach to not count climate effects as transboundary effects is consistent with the approach taken on other NSIPs such as the Proposed Expansion of Heathrow Airport (Third Runway), where the Planning Inspectorate's transboundary screening (on behalf of the SoS) states:

"*In respect of GHG emissions the Scoping Report suggests that whilst GHG emissions impact on the global atmosphere and can give rise to a range of climate change effects experienced globally, it is not possible to apportion or identify any impact of an increase (or any particular level of increase) in GHG emissions in terms of environmental effects on any particular country or state". The Scoping Report then concludes that "It is not anticipated that there is potential for significant effects on the environment of any European Economic Area (EEA) State or group of EEA States resulting from carbon emissions from the DCO Project, as the environmental receptor in this regard is the global atmosphere, rather than the environment of any country or state or group of countries or states". Consequently, the Scoping Report proposes that the effect of GHG emissions will be considered at a global level rather than with reference to a specific EEA state.*

…

The Inspectorate notes that the Scoping Report rules out the potential for specific GHG emissions impacts on individual EEA states. The Inspectorate accepts the reasoning presented in the Scoping Report that impacts from specific GHG emissions cannot be attributed to individual EEA states…".

7. CONCLUSION

7.1 This paper has considered the category or degree of substantial weight that should be given to the anticipated actual contribution to need from the Proposed Scheme, and how the requirements of section 104 of the PA 2008 should be, and have been, met. The paper concludes that a high degree of substantial weight should be afforded to

the anticipated extent of the Proposed Scheme's actual contribution to satisfying the demonstrated need. This substantial weight is not outweighed by the adverse impacts of the Proposed Scheme and none of the exceptions in section 104(4) to (8) of the PA 2008 apply.