



Immingham Green Energy Terminal

9.87 Applicant's Responses to the Examining Authority's
Third Round of Written Questions

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1 Introduction

Overview

- 1.1 This document has been prepared to accompany an application made to the Secretary of State for Transport (the "Application") under Section 37 of the Planning Act 2008 ("PA 2008") for a development consent order ("DCO") to authorise the construction and operation of the proposed Immingham Green Energy Terminal ("the Project").
- 1.2 The Application is submitted by Associated British Ports ("the Applicant"). The Applicant was established in 1981 following the privatisation of the British Transport Docks Board. The **Funding Statement [APP-010]** provides further information.
- 1.3 The Project as proposed by the Applicant falls within the definition of a Nationally Significant Infrastructure Project ("NSIP") as set out in Sections 14(1)(j), 24(2) and 24(3)(c) of the PA 2008.

The Project

- 1.4 The Applicant is seeking to construct, operate and maintain the Project, comprising a new multi-user liquid bulk green energy terminal located on the eastern side of the Port of Immingham (the "Port").
- 1.5 The Project includes the construction and operation of a green hydrogen production facility, which would be delivered and operated by Air Products (BR) Limited ("Air Products"). Air Products will be the first customer of the new terminal, whereby green ammonia will be imported via the jetty and converted on-site into green hydrogen, making a positive contribution to the United Kingdom's ("UK's") net zero agenda by helping to decarbonise the UK's industrial activities and in particular the heavy transport sector.
- 1.6 A detailed description of the Project is included in **Environmental Statement ("ES") Chapter 2: The Project [AS-069]**.

Purpose and Structure of this Document

- 1.7 This document contains the Applicant's responses to the **Examining Authority's Written Questions 3 (ExQ3) [PD-017]**.
- 1.8 Responses are ordered ascendingly by reference number, replicating the structure of the **Examining Authority's Written Questions 3 (ExQ3)**.
- 1.9 Responses are provided in a table. The text of the question appears on the lefthand side, with the Applicant's answer to its right.
- 1.10 Further materials pertinent to the Applicant's response are included at the end of the document as appendices where necessary.

2 Applicant's Responses to the Examining Authority's Third Round of Written Questions

1. General and Cross-topic Questions

GEN 3.1

Question	Response
<p>Hyperlinked Documents</p> <p>As identified in Annex H of the ExAs Rule 6 letter [PD-005], submissions must not include hyperlinks to documents/evidence hosted on a third-party website (technical reports, media articles). See AN8.4 The Examination for more information.</p> <p>With this in mind, ensure that any documents/evidence that has been provided via a hyperlink which you wish the ExA/SOS to consider in determining the DCO, are submitted by the end of the Examination. The submission of relevant extracts, as opposed to whole documents, is acceptable</p>	<p>The Applicant has carried out a review of recently submitted documentation and not found anything that might need to be submitted into Examination at this time. This will be considered for future deadlines.</p>

3. Climate Change	
CC 3.1	
Question	Response
<p>Case Law Update</p> <p>Case Law Update</p> <ul style="list-style-type: none"> • The way in which the Judgement deals with upstream emissions in “Kilkenny Cheese” is relevant to the Proposed Development? • There are geographical limits to indirect effects from upstream emissions? • Increased demand for something downstream could result in indirect effects from upstream emissions provided they are capable of meaningful assessment? • The Proposed Development would increase demand for a proportion of the upstream ammonia production? • A commercial agreement securing a proportion of the ammonia being produced points to a causal connection between the Proposed Development and the upstream emissions associated with the production of that particular proportion of ammonia? • These upstream emissions could be measured (even if only by way of a general estimate in accordance with any relevant guidance) to the extent they were capable of meaningful assessment as an indirect effect of the Proposed 	<p>Please submit the Judgement in R (on the application of Finch on behalf of the Weald Action Group) (Appellant) v Surrey County Council and others (Respondents) [2024] UKSC 20, as it was not attached to D5 submission [REP5-052].</p> <p>This is attached (Appendix 1).</p> <p>Furthermore, comment on whether:</p> <ul style="list-style-type: none"> • the Judgement has any bearing on the Applicant’s existing submissions regarding the beneficial indirect effects from the downstream emission savings of the Proposed Development? <p>The Applicant’s existing submissions on <i>Finch</i> are set out in responses to Q1.3.1.2 and Q1.3.2.5 ([REP1-024]). The Supreme Court took a different approach to the Court of Appeal and therefore the judgment does have a bearing on the submissions set out in [REP1-024]. Accordingly, the Applicant submitted an update to those submissions [REP5-052] which confirmed that the overall conclusions reached by the Applicant are unchanged by the judgment of the Supreme Court.</p> <ul style="list-style-type: none"> • The way in which the Judgement deals with upstream emissions in “Kilkenny Cheese” is relevant to the Proposed Development? <p>The Supreme Court in <i>Finch</i> agreed with the approach in Kilkenny Cheese as to the scope of EIA legislation (Appendix 2 - Kilkenny Cheese SC decision). The UK Supreme Court stated with reference to Kilkenny Cheese that “... <i>only effects which</i></p>

Development?

If, in your view, submissions on these matters have already been provided, signpost the ExA to the relevant submissions.

If the Applicant maintains that upstream emissions do not need to be assessed as an indirect effect of the Proposed Development, whether such an assessment could be made on a without prejudice basis, in the event the ExA disagrees with the Applicant's position when considering the totality of evidence during reporting.

Please submit the Judgement in R (on the application of Finch on behalf of the Weald Action Group) (Appellant) v Surrey County Council and others (Respondents) [2024] UKSC 20, as it was not attached to D5 submission [REP5-052].

Furthermore, comment on whether:

- The Judgement has any bearing on the Applicant's existing submissions regarding the beneficial indirect effects from the downstream emission savings of the Proposed Development?

evidence shows are likely to occur and which are capable of meaningful assessment must be assessed. In an important passage of the judgment, at para 110, the Irish Supreme Court gave a compelling justification for its decision which implicitly adopted these criteria”.

The UK Supreme Court was, however, clear that the two cases could be distinguished on their facts: in *Kilkenny Cheese*, the question was whether the EIA legislation required an assessment of the possible upstream effects associated with the potentially increased demand for milk production. In *Finch*, the question was whether the EIA legislation required assessment of the inevitable downstream impacts of the combustion of the extracted fuel. As such, the UK Supreme Court cites paragraph 110 of *Kilkenny Cheese* (reproduced in [REP5-052]) which referred to the “elusiveness” of causality between the upstream effects and the proposed development being considered; the UK Supreme Court said that paragraph “clearly articulates the relevant distinction between that case and the present case”, because on the facts of *Finch*, the causality was not elusive, but inevitable.

Kilkenny Cheese is therefore relevant to the Project as the UK Supreme Court confirmed its approach to the scope of EIA legislation was correct and, further, its factual matrix is far more analogous to the present case than the facts of *Finch*.

Upstream emissions in Kilkenny Cheese

As explained in [REP5-052], the central issue in *Kilkenny Cheese* was whether, or to what extent, there was an obligation to include in the EIA for the proposed cheese factory the possible environmental effects of producing the milk needed to supply the factory (as an indirect effect of the project). The Irish Supreme Court stated that the project “is likely to strengthen the overall demand for milk”, however the question was whether the resultant emissions arising as a result of the

	<p>increased demand were “indirect significant effects of the project” for the purposes of the EIA Directive.</p> <p>The Irish Supreme Court held that what constitutes the ‘project’ for this purpose was of “critical importance” ([81]) which was considered against a body of Irish jurisprudence which reflects UK case law concerning what constitutes the “project” for the purpose of the EIA Regulations and on which the Applicant has previously made submissions (see response to Q1.3.2.5 [REP1-024]). The appellant in Kilkenny Cheese ultimately accepted that the offsite milk production did not form part of the project ([86]).</p> <p>The Irish Supreme Court held:</p> <ul style="list-style-type: none">• The Board and the Inspector were entitled to find, on the evidence, that the existing and projected milk pool was sufficient to cater for the new factory. To that extent, it “<i>seems at least implicit...that the proposed factory would not have any significant indirect environmental effects precisely because...this milk was going to be produced in any event...and any additional agricultural emissions which might thereby result had already been identified and assessed</i>” ([108]);• While the project might strengthen demand by virtue of basic economic principles of supply and demand, the Irish Supreme Court found that any such assessment must also be tempered by reason of other evidence showing a yearly 1.5% increase in milk supply projected due to increased productivity across all suppliers ([109]);• The Irish Supreme Court therefore found that while any enhanced milk production in the future is likely not to be entirely independent of the operation of the new factory, “proof of causality” required to satisfy the requirement of EIA “remains entirely elusive, contingent and speculative”. Where the exact uplift in demand cannot be identified or measured, then it “cannot be the sort of significant indirect environment effect” that the EIA
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Direct contemplates: such effects are “so remote from the present project that they cannot realistically be regarded as falling within the Scope of Article 3(1)” ([110]-[111]).

In this regard, the Applicant has previously explained why the “upstream” facility in Saudi Arabia which will produce the green ammonia (and the GHG emissions associated with it) is a separate project for the purposes of the EIA Regulations (see response to Q1.3.2.5 [REP1-024] and [REP5-052]). In particular, the upstream facility has been separately consented in accordance with the requirements of that jurisdiction and therefore the environmental effects arising under that development will have been addressed as part of that process. The development is currently under construction and will continue to be developed irrespective of whether the Project obtains consent; the green ammonia will therefore be produced in any event (even if it cannot be ultimately exported to Immingham).

There is no evidence that demand from the Project might stimulate an increase in the production of green ammonia, above that which would occur in any event. The Applicant has confirmed that the production of ammonia at the Saudi Arabian facility will continue in the same quantities irrespective of whether it can export the ammonia to Immingham.

Accordingly, even if increased production was a possibility (which on the evidence it is not), any proof of causality would be subject to the same limitations identified in Kilkenny Cheese but to an even greater extent given the growing global market and the intended export of green ammonia from Saudi Arabia to multiple international destinations.

A copy of Kilkenny Cheese is appended to this response.

- **There are geographical limits to indirect effects from upstream emissions?**

The Supreme Court in *Finch* noted that “*the EIA Directive does not impose any geographical limit on the scope of environmental effects... In principle, all likely significant effects of the project must be assessed, irrespective of where (or when) those effects will be generated or felt*” ([93]).

Regulation 14(2) of the EIA Regulations sets out the framework of information to be included in an Environmental Statement which includes “a description of the likely significant effects of the proposed development on the environment”. Paragraph 5 of Schedule 4 to the EIA Regulations further clarifies that the description of the likely significant effects must cover (inter alia) any “indirect effects” (among others).

Accordingly, the Supreme Court’s comments reflect the statutory position in the EIA Regulations, which is not concerned with proximity, but rather requires that where an effect is (a) likely, and (b) is an effect of the proposed development, then it should be included in the EIA. This legal test applies equally to upstream effects as downstream.

For the reasons set out above, and in the Applicant’s previous submissions ([REP1-024] and [REP5-052]), the effects associated with the upstream production of ammonia are not addressed in the ES for the Project as they are not likely effects of the Project (and not for any reason of geographical limitation).

- **Increased demand for something downstream could result in indirect effects from upstream emissions provided they are capable of meaningful assessment?**

Such upstream emissions would need to meet the tests set out in the EIA Regulations as to whether they are likely effects of the relevant proposed development to be included in any ES. As confirmed by the Supreme Court, only effects which evidence has shown (a) are likely to occur and (b) are capable of

meaningful assessment must be assessed [167]. For the reasons summarised above those conditions are not satisfied on the facts of this case.

- **The Proposed Development would increase demand for a proportion of the upstream ammonia production?**

The Applicant has confirmed that the development of the Project would not change the level of production of ammonia in Saudi Arabia [REP5-052]. The Saudi Arabian facility is already under construction and will come forward irrespective of the outcome of the Project. The ammonia produced will be in the same quantities whether the Project is granted consent or not.

- **A commercial agreement securing a proportion of the ammonia being produced points to a causal connection between the Proposed Development and the upstream emissions associated with the production of that particular proportion of ammonia?**

The commercial agreement with Air Products does not establish a causal link between the Project and the upstream emissions.

The Supreme Court in *Finch* considered the range of legal tests that can be applied to determine causation (in addition to the question of fact which must also be determined). At one end, it referred to the “strongest possible test of causation” requiring the occurrence of event X to be both a necessary and sufficient condition for the occurrence of Y [69], in the middle, the “intervening act” test (whereby an intervening act can break the chain of causation), and at the weaker end, the “but for” test (i.e. would event Y have occurred but for the occurrence of event X) [68].

As set out above and in [REP5-052], the Saudi Arabian facility is already proceeding irrespective of the Project. The ammonia will be produced and in the same

quantities irrespective of whether the Project obtains consent and irrespective of where the end users are located; it does not depend on the Project coming forward. While Air Products has entered into an agreement to purchase 100% of the ammonia produced, the agreement does not ring fence or specify that a certain proportion of the ammonia is for the Project. In the event that the Project does not come forward the same quantity of ammonia will be produced and Air Products will still purchase 100% of that ammonia (see [REP5-052] and [REP1-024]).

It therefore cannot be said that the Project is a “necessary and sufficient condition” for either the Saudi Arabian facility to proceed or for it to proceed on the basis of a certain output. Alternatively, it is also not the case that the Saudi Arabian facility would not come forward “but for” the development of the Project, or that the Saudi Arabian facility would only produce a certain, lesser quantity of ammonia “but for” the Project.

- **These upstream emissions could be measured (even if only by way of a general estimate in accordance with any relevant guidance) to the extent they were capable of meaningful assessment as an indirect effect of the Proposed Development?**

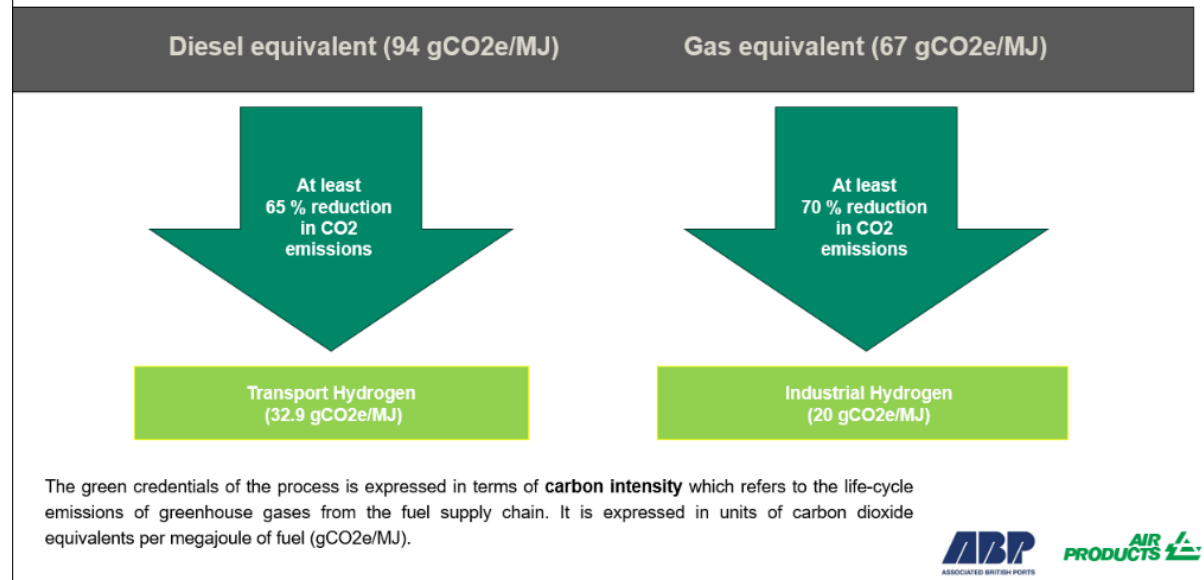
If the Applicant maintains that upstream emissions do not need to be assessed as an indirect effect of the Proposed Development, whether such an assessment could be made on a without prejudice basis, in the event the ExA disagrees with the Applicant's position when considering the totality of evidence during reporting.

The Applicant set out in its oral submissions at ISH1 (see [AS-018] and the written summary provided at Deadline 1 [REP1-064]) that the carbon intensity (CI) of the hydrogen produced at the facility was assessed with reference to its upstream components. Importantly, low carbon hydrogen for the transport market must have a CI value which is about 35% of the equivalent diesel value (or 30% for the general

industrial market). The Applicant confirmed that to comply with the Renewable Transport Fuel Obligation Order, the CI of the low carbon hydrogen produced by the Project must be less than 32.9 gCO₂e/MJ.

This was set out on the following slide forming part of the Applicant's strategic overview of the Project (page 10, [AS-018]) and spoken to at ISH1 ([REP1-064]):

(v) Overall benefit of hydrogen produced by the project



It was explained at ISH1 that the upstream components of the CI of the product, which are in effect the upstream emissions, are:

- Creation of hydrogen (using wind and solar energy to split water into hydrogen and oxygen by electrolysis) = 3% or 0.99 gCO₂e/MJ;

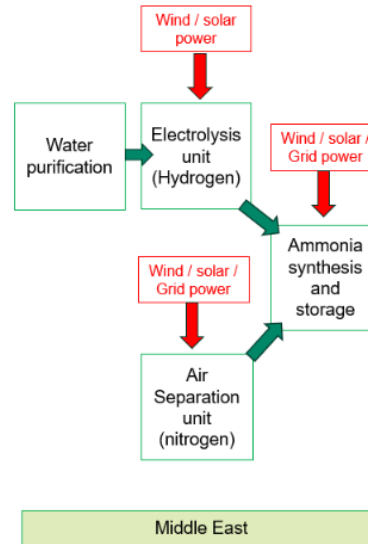
- Conversion to ammonia (the Saudi Arabian facility has an on-site air separation unit to generate nitrogen from the air and an ammonia plant which generates ammonia (NH₃) from hydrogen (H₂) and nitrogen (N₂) = 9% or 2.96 gCO₂e/MJ; and
- Shipping (ammonia to be shipped in liquid form at -32°C in Very Large Gas Carriers) = 14% or 4.61 gCO₂e/MJ.

This was demonstrated on the below slides forming part of the Applicant's strategic overview of the Project (pages 12-13, [\[AS-018\]](#)) and spoken to at ISH1 ([\[REP1-064\]](#)).

For completeness, the sources of emissions (direct or associated) in relation to the above include:

- Production of lubricating oils, catalyst and chemicals used in the processes;
- Use of grid electricity supplies; and
- Use of marine fuel oil.

(v) Creation of green ammonia in the Middle East



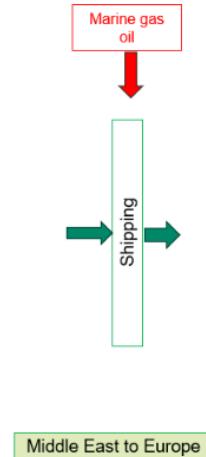
The generation of hydrogen molecules through electrolysis is entirely from renewable power.

- This process accounts for about 3% of the overall Carbon intensity of the final green H2
- There is CI contribution from areas such as catalysts, lubricating oils, water treatment etc

The generation of nitrogen and ammonia uses renewable power but also some electrical power from the local grid.

- This is due to critical equipment not being able to tolerate any fluctuations in electrical supply.
- This accounts for about 9% of the overall Carbon intensity of the final green H2 product

(v) Shipping



- VLGC vessels will be used to transport refrigerated liquid ammonia to Europe (Immingham, Rotterdam and Hamburg initially)
- These will be vessels (up to 230m long) or specific ammonia carrier ships of which some are now in construction

Green credentials

- Currently these ships are powered by marine gas oil.
- Shipping accounts for about 14% of the overall Carbon intensity of the final green H2 product
- Future technology improvements and regulations in the shipping industry means shipping emissions is expected to reduce
 - First Ammonia fuelled engines expected to be on market in 2024 (MAN) and new ammonia carriers are likely to be the first users of his technology. Expected that 1st ammonia-fuelled vessels to be operational in the second half of this decade
- UK Government has set legally binding Co2 emission reduction for shipping as part of its 6th Carbon Budget and net zero 2050 legislation

Accordingly, notwithstanding the Applicant's position that the upstream effects of producing and shipping ammonia are very clearly not effects of this Project and therefore do not fall to be considered in the ES for the purposes of the EIA Regulations, the Applicant has provided the Examining Authority with a calculation of the upstream emissions associated with ammonia production and shipping for the purposes of demonstrating the green credentials of the hydrogen product. Calculation of such emissions is necessary to establish compliance with the low carbon hydrogen schemes as referred to in [AS-018] and [REP1-064].

CC 3.2	
Question	Response
<p>Carbon Budget Delivery Plan</p> <p>Please submit the Carbon Budget Delivery Plan (notwithstanding the hyperlink already provided in the ES) along with the Judgement in Friends of the Earth v Secretary of State for Energy Security and Net Zero [2024] EWHC 995 (Admin) and comment on uncertainties in achieving net zero. Planning Practice Guidance [Paragraph: 001 Reference ID: 21a-001-20140306] is clear that planning conditions, and by extension requirements, can be used to enhance development. It follows that the outcome of the necessity test is not purely a function of whether a requirement mitigates harm to make a development acceptable.</p> <p>In this context, would a requirement that secures low carbon hydrogen certification help address net zero policy delivery uncertainty and thereby enhance the Proposed Development's contribution to achieving net zero?</p>	<p><u>The Carbon Budget Delivery Plan, Friends of the Earth v Secretary of State for Energy Security and Net Zero & commentary on uncertainties in achieving net zero</u></p> <p>The Carbon Budget Delivery Plan and judgment in the above case are attached as Appendices 3 and 4 respectively.</p> <p>The High Court case concerned the process prescribed in the UK to achieve net zero greenhouse gas emissions by 2050 and the carbon budgets required to be set. In an earlier case (R (Friends of the Earth Ltd) v Secretary of State for Business, Energy and Industrial Strategy [2023] 1 WLR 225), the High Court had decided that the government had failed to comply with the duty under section 13(1) of the Climate Change Act 2008 to prepare proposals and policies to enable relevant carbon budgets up to and including the sixth (2033 – 2037) to be achieved and the obligation under section 14(1) of that Act to set out for Parliament the proposals and policies for meeting those budgets. The Secretary of State for Business, Energy and Industrial Strategy was ordered to lay before Parliament a report which was compliant with section 14 by 31 March 2023. That report, being the Carbon Budget Delivery Plan, was laid before Parliament on 31 March 2023.</p> <p>In the 2024 case, the Claimants contended again that the Secretary of State had failed to comply with sections 13 and 14 of the Climate Change Act 2008. The High Court granted the application for judicial review. The decision considered the adequacy of the process of the Secretary of State's decision making under that legislation – including, for example, whether or not the Secretary of State had</p>

sufficient information and the correct information on which to make his decision – in accordance with usual public law principles.

The existence of uncertainties in achieving net zero is a matter of fact. The background set out in the judgment reflects the fact that there are different levels of confidence in the delivery of the various proposals and policies referred to, and scientific uncertainty can limit precision, such that any emissions savings forecast contains inherent uncertainty.

The Carbon Budget Delivery Plan also acknowledges this: “*The context within which we are delivering this transition is inherently uncertain. There are a wide range of fluctuating external factors which drive changes in greenhouse gas emissions and therefore the amount of savings we subsequently need to deliver to achieve carbon budgets.*” [36]

It is important to note, however, that the case is concerned with the specific role of the Secretary of State in setting carbon budgets for the United Kingdom under the Climate Change Act 2008, and not the separate process for determining individual applications for development consent under the Planning Act 2008.

A key practical issue for the Secretary of State in that former role is addressing uncertainty in the projections. These uncertainties include whether planned policies and proposals are delivered in full. Insofar as this context has relevance for the purpose of considering applications for developments such as the Project that have the potential to make a contribution to achieving net zero, it is to underline (a) the urgency of approving and enabling the delivery of such projects, and (b) the importance of not imposing requirements which may hinder or delay the

implementation of such projects unless they are properly justified by reference to the correct policy tests as explained below.

Planning Practice Guidance

The Planning Practice Guidance supplements the policy set out in the National Planning Policy Framework (NPPF) and the relevant national policy statement, but it does not, and does not purport to, amend that policy. In particular, the tests for the imposition of conditions and requirements are set by policy and the guidance must be understood by reference to that policy.

That can be seen in the text of paragraph 003 of the Planning Practice Guidance which refers to paragraph 55 of the NPPF and states that this “makes clear that planning conditions should be kept to a minimum, and only used where they satisfy the following tests: 1. Necessary ...” (emphasis added).

This is further emphasised in paragraph 018 of the Guidance which calls for “Rigorous application of the 6 tests” so as to “reduce the need for conditions” and explains that “it is good practice to keep the number of conditions to a minimum wherever possible” (emphasis added); and paragraph 019 which states in terms that any proposed condition that fails to meet one of the six tests “should not be used”.

The full text of the paragraph of the Planning Practice Guidance [Paragraph: 001 Reference ID: 21a-001-20140306] referred to in the ExA’s question is set out below:

Why and how are conditions imposed?

Why are conditions imposed on a planning permission?

When used properly, conditions can enhance the quality of development and enable development to proceed where it would otherwise have been necessary to refuse planning permission, by mitigating the adverse effects. The objectives of planning are best served when the power to attach conditions to a planning permission is exercised in a way that is clearly seen to be fair, reasonable and practicable. It is important to ensure that conditions are tailored to tackle specific problems, rather than standardised or used to impose broad unnecessary controls.

Paragraph: 001 Reference ID: 21a-001-20140306

Revision date: 06 03 2014

The ExA's question suggests that the above guidance means that planning conditions (and by extension requirements) can be imposed even when they are not necessary to make development acceptable, but instead are intended simply to enhance development. The implication appears to be that conditions or requirements can be considered "necessary" where enhancement is in some way desirable, but is not needed to mitigate harm so as to make development acceptable.

If that is the ExA's interpretation of the guidance, it is not correct. The statement in the guidance that "conditions can enhance the quality of development" must be read in the full context of the sentence of which it forms part, and in the context of the guidance as a whole and the policy to which it relates.

First, as is clear from the heading, the guidance is general introductory guidance on *why* conditions are imposed and their role in the planning system. It is not seeking to describe or define the tests for imposing conditions or requirements. Those are

contained in policy, to which the guidance is subservient, and have been consistent and settled for many years. Those tests include the test of necessity, which is well-established and understood as a key plank of the Government's approach to development control decision-making. The Guidance both acknowledges that point and underscores the importance of rigorously applying those tests.

Second, the guidance states that, when conditions are used properly, they can result in enhancements to the quality of development. As Advice Note 15 makes clear, the proper use of conditions or requirements requires those conditions or requirements to comply with the six tests (i.e. to be precise, enforceable, necessary, relevant to the development, relevant to planning and reasonable in all other respects). This introductory line to the guidance on conditions acknowledges that the process of properly applying conditions (i.e. in accordance with those tests) can result in enhancements to development. It does not offer support to decision makers in imposing conditions with the sole aim of securing enhancements.

Third, properly read in context, the circumstances in which the guidance indicates that the imposition of conditions can enhance the quality of development are where (a) a proposed development would have adverse effects, (b) it would be necessary as a result to refuse planning permission, (c) the mitigation of those effects can enhance the quality of that development and this can however be secured through a suitable condition, and (d) such a condition therefore enables the development to proceed and enhances its quality.

If a proposed development is acceptable having regard to its impacts and relevant policy, it should be approved. If it is not acceptable then the decision-maker must consider whether it can be made acceptable by imposing suitable requirements or seeking suitable obligations (see paragraphs 55 to 57 of the NPPF). There is no

separate subsequent stage for the decision-maker of considering whether a proposed development that is acceptable having regard to its impacts and relevant policy, can be made yet more acceptable (or 'enhanced') by the imposition of further requirements.

It does not therefore follow from the guidance that the necessity test is met where, for example, an enhancement is simply thought to be in some way desirable (rather than necessary to mitigate harm to an acceptable level). It follows from the guidance that the proper application of conditions (including the necessity test) may result in enhancement to the quality of otherwise unacceptable development.

It is consistent with the above that the paragraph in the guidance goes on to provide general introductory advice that the power to impose conditions is best exercised in a way that is "clearly seen to be fair, reasonable and practicable", "to tackle specific problems" and not to "impose broad unnecessary controls".

Would a requirement that secures low carbon hydrogen certification help address net zero policy delivery uncertainty and thereby enhance the Proposed Development's contribution to achieving net zero?

This specific question builds on the premises set out in the earlier part of the ExA's question. For the reasons explained above, those premises are not soundly based.

Uncertainty in the delivery of net zero policy as considered in the Friends of the Earth case provides no support for the imposition of unnecessary requirements on projects which have the potential to contribute to the achievement of net zero. If that uncertainty has any relevance, it is only to underline the importance of ensuring that the delivery of such projects is not unnecessarily delayed or encumbered by additional burdens imposed at the development control stage which are not required

to make the development acceptable in land use planning terms. That would be directly contrary to national policy both on the imposition of requirements and for the achievement of net zero.

Further, properly understood, the Planning Practice Guidance offers no support for departing from the rigorous application of the necessity test set by policy and does not allow for the imposition of requirements which are unnecessary but which are considered potentially to achieve some 'enhancement'. To interpret the guidance in that way would plainly be wrong, and constitute a misinterpretation of its terms. Applying the six tests, an enhancement can sometimes be the outcome of a requirement, but a requirement can only be imposed where it satisfies each of those tests, including the test of necessity.

In the response to Action Point 4 arising from Issue Specific Hearing 6 (ISH6) **[REP3-066]** (see paragraphs 2.11 to 2.15), the Applicant set out a full explanation as to why a requirement to secure low carbon hydrogen production would not satisfy the six tests. That analysis is not repeated here in full. However, the Applicant reaffirms the analysis in paragraph 2.12 of that response, which addresses the necessity test. It explains that, unless the planning balance would be in favour of refusal in the absence of a requirement to control a particular matter, such a requirement cannot be considered necessary. Here, the Project accords with the relevant National Policy Statement, resulting in a presumption of favour of grant, and the planning balance is in favour of approval. A requirement securing low carbon hydrogen certification is not therefore necessary.

That position is entirely consistent with and supported by the guidance that the ExA refers to, which addresses circumstances in which development would otherwise be refused as a result of adverse effects.

In the context of greenhouse gas emissions, as set out in full in [REP3-066] (and aside from the analysis on the six tests), the benefits arising from the production of low carbon hydrogen do not need to be secured. First, no adverse environmental effects of the Proposed Development have been identified in the environmental impact assessments in relation to greenhouse gases, and therefore a requirement to control any adverse effects is not needed (paragraph 1). Second, the Applicant considers that it is within the normal scope of the exercise of planning judgment for the Secretary of State to give weight to the benefits of low carbon hydrogen on the basis of the evidence presented as to their likelihood (paragraphs 2.1 to 2.10).

The existence of uncertainty around the delivery of policies and proposals relied on by the Secretary of State when carrying out the functions ascribed to him under the Climate Change Act 2008 does not (and could not properly) justify the imposition of a requirement securing low carbon hydrogen certification. As the case of Friends of the Earth v Secretary of State for Energy Security and Net Zero [2024] confirms, the Secretary of State must have sufficient understanding of such uncertainty in considering policies and plans to meet carbon budgets, but that judgment offers no support for the imposition of requirements of the type contemplated by the ExA in this question. Even if such a requirement was considered to 'help address' uncertainty when the Secretary of State is exercising that separate statutory function under the Climate Change Act 2008 (for which there is no evidence and which is not accepted in principle), that would not suffice to establish necessity which is the correct test as explained above.

Further and in any event, a requirement that secures low carbon hydrogen certification would not help address net zero policy delivery uncertainty and would not enhance the Proposed Development's contribution to achieving net zero. Indeed, there is a real risk that it could have the opposite effect as explained below.

Attention is drawn above to the analysis in paragraphs 2.11 to 2.15 of [REP3-066] which concludes that the requirement would be unnecessary, unreasonable, unenforceable and contrary to the policies in the NPSfP. Focusing on the practical, adverse implications for Air Products:

1. A requirement to secure low carbon hydrogen certification would obviously mean that, if at any stage in the lifetime of the development the hydrogen is not compliant, there would be a breach of the requirement. In such circumstances, Air Products would be at risk of enforcement and criminal liability. Whether or not the hydrogen is compliant is only assessed at the end of the process and on a batch by batch basis.
2. There are circumstances in which a batch of hydrogen may not be compliant and which are outside the control of Air Products. For example, the supplier of renewable electricity through the power purchase agreement could fail in its renewable supply for a short period (such that electricity was taken from the grid). That could render the associated batch of hydrogen non-compliant yet make Air Products in breach of the terms of the DCO. That is clearly an unacceptable position for an operator.
3. Further, in the event that there is a temporary break in the supply chain of renewable ammonia (particularly as sources of renewable ammonia

develop), there may be a requirement to import non-renewable ammonia on a temporary basis to maintain continuity of supply for customers. The resulting hydrogen would not be compliant. During that period Air Products would suffer financial loss, which in itself provides a powerful incentive for it to minimise the need for such imports. To prevent such imports, however, could undermine Air Products' ability to deliver a reliable supply of fuel. A requirement with the effect of preventing anything other than low carbon hydrogen would also therefore run directly contrary to the Government's policy of stimulating energy transition by disincentivising customers from switching to hydrogen because of concerns over security of supply.

4. A requirement securing low carbon hydrogen certification on an individual hydrogen development on a piecemeal basis would adversely affect the purpose of the Renewable Fuel Transport Obligation and low carbon hydrogen business models i.e. to create a level playing field through the setting of standards at a national level. It thereby increases risk and cost to the operator of the Project and has the potential to distort the market, to impact competition (contrary to the National Policy Statement for Ports) and ultimately to discourage trade (undermining the purpose of the low carbon hydrogen business models).

A requirement securing low carbon hydrogen certification would therefore result in unacceptable trading conditions, risks and additional costs, which would run counter to the aim of encouraging production of low carbon hydrogen to contribute to the achievement of net zero.

6. Habitat Regulations Assessment	
HRA 3.1	
Question	Response
<p>Sediment Sampling</p> <p>In your Relevant Representation [RR-016, Paragraph 3.3.2] you noted that you had comments surrounding Condition 9, Sediment Sampling, and Condition 20(1), Disposal at Sea, and that you were reviewing these in line with other developments and would provide further comments at a later stage.</p> <p>If these further comments have been provided, signpost the ExA to the submission document, alternatively provide these at Deadline 6.</p>	<p>This question is addressed to the Marine Management Organisation (“MMO”). However, it is the Applicant’s understanding that the matters relating to Condition 9 and Condition 20(1) have been addressed by the amendment to these conditions in the draft DCO which was submitted at Procedural Deadline A [PDA-004] and as outlined in the Response to Relevant Representations [REP1-021]. In the draft Statement of Common Ground submitted at Deadline 5 [REP5-039], the MMO state that their final position on the draft DCO and Deemed Marine Licence (“DML”) wording has been presented in their Deadline 4 submission [REP4-052] which makes no reference to these conditions.</p>
HRA 3.2	
Question	Response
<p>Section 106 Unilateral Undertaking relating to Habitat Compensation Scheme</p> <p>A second Revision of this UU was received at Deadline 4 [REP4-041]. Can the Applicant and other signatories (NELC and ERYC) confirm whether this UU will be agreed and signed off prior to the end of the Examination?</p>	<p>In the Applicant’s cover letter for its submissions at Deadline 5 [REP5-001], the Applicant indicated that “<i>Natural England have now confirmed in their correspondence to the Planning Inspectorate dated 28 June, that they agree with the assessment and conclusion of no adverse effect on integrity of the Humber Estuary SAC/Ramsar from habitat loss in-combination. The Report on Implications for European Sites (“RIES report”) is due to be published by the ExA on 17 July. The RIES report will be considered when available alongside the submissions of Natural England at Deadline 5 and the UU will be updated accordingly to reflect the</i></p>

need or otherwise for habitat compensation based on the conclusions reached. An update will be provided at Deadline 6.”

The draft Unilateral Undertaking (“UU”) submitted at Deadline 4 [REP4-041] was drafted to provide for the delivery of habitat compensation in circumstances where Natural England concluded that an adverse effect on integrity (“AEoI”) from the Project (alone or in combination with other plans or projects) on the protected sites cannot be ruled out. However, Natural England has subsequently confirmed (in its submissions at Deadline 5) that it agrees with the conclusion of the Applicant under the Shadow HRA that the Project will not have an AEoI on the protected sites alone or in combination with other plans and projects. As a result, the derogation stage of the Habitats Regulations Assessment (“HRA”) is not engaged and therefore no compensation pursuant to the Conservation of Habitats and Species Regulations 2017 (the “Habitat Regulations”) is required to be provided.

In light of the above, the Applicant has now amended the UU to remove reference to the delivery of habitat compensation. The Applicant confirmed in the Planning Statement [APP-226] at paragraph 7.5.27 that *“whilst not part of the Application, it should be noted that ABP also intends to allocate to the Project the environmental benefits and enhancements generated by an area of one hectare of intertidal habitat that is being created through an already approved (and currently under construction) realignment scheme known as the Outstrays to Skeffling Managed Realignment Scheme (“OtSMRS”), which is located on the north bank of the Humber Estuary. The OtSMRS as a whole will contribute to the enhancement of the biodiversity and ecological functioning of the wider Humber Estuary and the part of it allocated to the Project is on land owned by ABP”*. The Applicant still intends to allocate one hectare of the habitat that is being created at OtSMRS as enhancement for the Project, but because the habitat is no longer required as habitat compensation for the Project under the Habitats Regulations, it does not need to be secured in conjunction with the marine works for the construction of the NSIP, as part of the Project.

As a result, the UU only needs to be addressed to East Riding of Yorkshire Council (“ERYC”) as the relevant planning authority with jurisdiction over the OtSMRS site. The UU no longer needs to be addressed to North East Lincolnshire Council (“NELC”) as it no longer needs to link the delivery of the habitat at OtSMRS to the construction of the marine works as part of the Project (NELC being the relevant authority with jurisdiction over the land where the NSIP is to be constructed). The UU simply needs to confirm that as part of the delivery of the Project the Applicant will allocate a hectare of the OtSMRS site as enhancement as the Applicant indicated that it would in paragraph 7.5.27 of its Planning Statement. The updated draft UU has been provided to EYRC for comment and an update on negotiations on the draft UU will be provided at Deadline 7.

Were the Secretary of State for Transport (“Secretary of State”) to reach a contrary view to Natural England in undertaking its Appropriate Assessment of the Project and conclude that an AEol from the Project on the protected sites (alone or in combination with other plans and projects) cannot be ruled out and consequently the derogation stage of the HRA would be engaged. In that respect, the Applicant has already demonstrated through the Without Prejudice Report to Inform the HRA Derogation [REP3-030] (the “Derogation Report”) that this impact can be addressed and compensated. As set out in the Derogation Report, the in-combination effect on the intertidal habitat can be addressed through a section 106 obligation to secure habitat compensation. If the Secretary of State were to disagree with the conclusions of the Applicant and Natural England and conclude that an AEol from the Project cannot be ruled out, the Applicant would therefore expect to be given the opportunity to submit such an obligation to the Secretary of State ahead of the decision on the DCO application, if required. The Applicant’s position is that it would be prepared to enter that obligation for the reasons explained above. It should also be noted that, whilst the Applicant has undertaken to allocate a hectare of the OtSMRS site as ecological enhancement for the Project, such enhancement is not necessary to make the development acceptable in planning terms, and therefore it is the Applicant’s position that

	<p>the obligation to allocate an area for enhancement is not a material consideration to which the Examining Authority and the Secretary of State should have regard in their respective tasks of reporting on and determining the DCO Application.</p>
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HRA 3.3	
Question	Response
<p>Items marked Yellow</p> <p>The Applicant has responded to Action Point 4 from ISH8 [REP5-050] with an update on all issues marked Yellow.</p> <p>Update your representation in relation to the information provided and confirm whether any issues have now turned Green.</p>	<p>It is noted that this question is directed to Natural England, however by way of an update, the Applicant can confirm that there has been continued engagement with Natural England since ISH8 and agreement has been reached that item NE34 (on air quality) is now resolved.</p> <p>To achieve this position the Applicant provided Natural England with a Technical Note on source apportionment of air emissions as well as updating the Shadow HRA [TR030008/APP/7.6 (6)] with further information on flare stack modelling. As a result of this, Natural England has agreed that item NE34 is now resolved. This is reflected in the final SoCG which will be submitted at Deadline 7. The updated Shadow HRA [TR030008/APP/7.6 (6)] and the Technical Note is also being submitted into Examination at Deadline 6 in response to the Report on the Implications for European Sites [PD-018].</p>

7. Landscape and Visual Effects

LV 3.1

Question	Response
<p>North Lincolnshire Landscape Character Assessment</p> <p>The North Lincolnshire Landscape Character Assessment was referred to in the Landscape and Visual Assessment [APP-055, Paragraph 13.6.23], although it was noted that this document was under review at the time of writing. Has the review been completed and, if so, do the conclusions in the ES remain valid?</p>	<p>ES Chapter 13: Landscape and Visual Impact [APP-055] uses the North Lincolnshire Landscape Character Assessment by JBA consulting as a basis for the landscape assessment in relation to part of the study area as this was commissioned by North Lincolnshire Council to capture the changes to the landscape across the borough since the current North Lincolnshire Landscape Character Assessment was published on 13 September 1999.</p> <p>The emerging North Lincolnshire Local Plan is currently in Stage 6 (Submission and Examination) and not yet adopted. The Landscape Character Assessment review by JBA Consulting referred to in ES Chapter 13: Landscape & Visual Impact [APP-055] still forms part of the evidence base for the emerging Local Plan. Therefore, the conclusions within the ES on landscape character remain valid.</p> <p>Reference - JBA Consulting on behalf of North Lincolnshire Council (n.d.). North Lincolnshire Landscape Character Assessment – a review by JBA Consulting on behalf of North Lincolnshire Council (no publication date).</p>

8. Flood Risk and Coastal Change	
FR 3.1	
Question	Response
<p>Marine Policy Statement</p> <p>Appendix B of the Planning Statement [APP-228] assesses compliance with the East Inshore Marine Plan. Should a similar compliance assessment be prepared for the Marine Policy Statement, in order to ensure the ExA can give regard to it in accordance with s104(2)(aa) of the PA2008?</p>	<p>An analysis of the compliance of the Project with relevant policy contained within the UK Marine Policy Statement is provided, as appropriate, within the main body of the Planning Statement [APP-226] – see, for example, Chapters 5 and 7.</p> <p>To assist the ExA, however, this analysis has been represented and added to in the form of a compliance table which is provided as an appendix to this response.</p>
FR 3.2	
Question	Response
<p>Flood Emergency Response Plan</p> <p>Is the Flood Emergency Response Plan mentioned in the ES [APP-209] adequately secured in the dDCO? NPPF states there must be safe access and escape routes included where appropriate, as part of an agreed emergency plan. As such, would submission of these details need to be secured by requirement for the approval of NELC (as the LLFA) in consultation with other relevant statutory authorities?</p>	<ol style="list-style-type: none"> 1. Flood emergency response is addressed and secured in different ways for the construction and operational periods. <p>Construction period</p> <ol style="list-style-type: none"> 2. The provisions in the dDCO relating to the Construction Environmental Management Plan (“CEMP”) address the required flood emergency response during construction. Requirement 6 (Schedule 2) and paragraphs 8 and 15 of the Deemed Marine Licence require the submission to and approval of the final CEMP(s) by NELC in consultation with the Environment Agency. The final CEMP must be in general accordance with the Outline CEMP [TR030008/APP/6.5 (7)]. 3. Paragraph 1.1.3 of the Outline CEMP states that “Subject to the grant of consent for the Project by the SoS, Final CEMPs (including relevant supporting plans) will be

provided in relation to relevant parts of the Project in accordance with the measures contained in this Outline CEMP following the appointment of the contractor(s), as set out in the draft DCO....” (emphasis added).

4. Table 15 of the Outline CEMP contains the following commitment (emphasis added): “During the construction phase, the Contractor would monitor weather forecasts on a monthly, weekly and daily basis, and plan works accordingly. For example, works adjacent to the flood defences, works adjacent to the channel of any watercourse would be avoided or halted were there to be a risk of high flows or even flooding. In addition, the Contractor would sign up to Environment Agency flood warning alerts and produce an Emergency Response Plan which details the actions it would take in the event of a possible flood event. These actions would be hierarchal meaning that as the risk increases the Contractor would implement more stringent protection measures. This is important to ensure all workers, the construction site and third-party land, property and people are adequately protected from flooding during the construction phase.”

5. Accordingly, each final CEMP submitted under Requirement 6 and paragraph 8 of the Deemed Marine Licence for a part of the authorised development must contain the necessary Emergency Response Plan for the construction phase of that part. Paragraph 1.1.9(f) of the Outline CEMP submitted at Deadline 6 **[TR030008/APP/6.5 (7)]** has been updated to confirm the position.

6. This will ensure that the need for emergency response to flooding is properly considered and addressed as part of the overall planning process for the construction period and tailored to the specific construction works that the relevant final CEMP addresses. As such, a separate requirement preventing commencement from taking place until an Emergency Response Plan is submitted and approved is unnecessary and unreasonable.

Operational period

7. Requirement 13 requires the authorised project to be carried out and operated in accordance with the approved flood risk assessment (which will be a certified

document) [AS-134]. There is a similar provision at paragraph 14 of the Deemed Marine Licence.

8. Paragraph 6.7.2 of the flood risk assessment states that: “A Flood Emergency Response Plan will be developed to ensure the residual risk to the Site is sufficiently managed and mitigated. A management system will be implemented to respond to a variety of emergency situations both during normal hours (24/7) and over holiday periods.”

9. Paragraph 6.7.3 confirms: “The Flood Emergency Response Plan will be prepared in consultation with the Environment Agency and LLFA. This will define access and egress routes from the Site and will ensure that the Project is registered to receive flood warnings from the Environment Agency’s ‘Floodline Warnings Direct’ service to inform if there is a risk of flooding from a tidal storm surge type event which could result in overtopping or breach of defences. This will include the recommendation of at least one Flood Warden for the plant.”

10. As a result of the requirement to comply with the flood risk assessment, the Applicant is therefore already obliged to produce an Emergency Response Plan in consultation with the Environment Agency and LLFA.

11. As there is no mechanism in Requirement 13 or Deemed Marine Licence securing the timing of approval of such an operational Emergency Response Plan, the Applicant does not object to the imposition of an express mechanism provided that it is limited to the operational period (given, as explained above, the CEMP addresses the construction period).

12. On that basis, the Applicant proposes amendments to the Examining Authority’s proposed form of wording for a new requirement (as set out in the Examining Authority’s Schedule of Proposed Changes to the draft Development Consent order [PD-019]) as follows, to reflect that (a) the requirement addresses only the operational phase and

therefore (b) must be in place before the operation of any part commences but should not hold up construction works and (c) to align with the remaining drafting in the dDCO.

21 – (1) No part of Work No. 1 outside of the UK marine area, Work No. 2, Work No. 3, Work No. 5 or Work No. 7 may be commenced brought into operational use until a flood emergency response plan to apply during operation of for that part has been submitted to and approved by the relevant planning authority, following consultation with North East Lincolnshire Council in its capacity as the lead local flood authority (within the meaning of the Flood and Water Management Act 2010) and the Environment Agency on matters related to their respective functions.

(2) Any a flood emergency response plan submitted and approved under sub paragraph (1) must (so far as applicable) be in general accordance with the flood risk assessment contained in appendix 18.A of the environmental statement.

(3) Each part of Work No. 1 outside of the UK marine area, Work No. 2, Work No. 3, Work No. 5 and Work No. 7 must be operated in accordance with the plan approved under sub-paragraph (1) for that part, unless otherwise approved by the relevant planning authority.

13. The Deemed Marine Licence would also need to be updated by new paragraphs 14(5)-(7) as follows:

(5) No part of the licensed activities may be brought into operational use until a flood emergency response plan to apply during operation of that part has been submitted to and approved by the MMO, following consultation with the Environment Agency on matters related to its functions.

(6) Any flood emergency response plan submitted and approved under sub-paragraph (5) must (so far as applicable) be in general accordance with the flood risk assessment contained in appendix 18.A of the environmental statement.

(7) Each part of the licensed activities must be operated in accordance with the plan approved under sub-paragraph (5) for that part, unless otherwise approved by the MMO.

14. A new definition in the Deemed Marine Licence would be added as follows to prevent repetition: "flood risk assessment" means the flood risk assessment contained in appendix 18A of the environmental statement;'

15. These changes are included in the dDCO submitted at Deadline 6 **[TR030008/APP/2.1 (8)]**.

Construction & operation

16. If the Secretary of State were not to accept the Applicant's position, as set out above, that the CEMP(s) appropriately secure the production of a flood emergency response plan to apply during construction (and that an additional requirement would be unnecessary and unreasonable), the Applicant sets out below the proposed drafting for an additional requirement in respect of the construction period:

[20 – (1) No part of Work No. 1 outside of the UK marine area, Work No. 2, Work No. 3, Work No. 5 or Work No. 7 (except the clearance of trees or other vegetation from Long Strip) may be commenced until a flood emergency response plan to apply during construction of that part has been submitted to and approved by the relevant planning authority, following consultation with North East Lincolnshire Council in its capacity as lead local flood authority (within the meaning of the Flood and Water Management Act 2010) and the Environment Agency on matters related to their respective functions.

(2) Any flood emergency response plan submitted and approved under sub paragraph (1) must (so far as applicable) be in general accordance with the flood risk assessment contained in appendix 18.A of the environmental statement.

(3) Any works forming part of Work No. 1 outside of the UK marine area, Work No. 2, Work No. 3, Work No. 5 and Work No. 7 (except the clearance of trees or other vegetation from Long Strip) must be carried out in accordance with the approved flood emergency response plan for that part, unless otherwise approved by the relevant planning authority.]

17. The equivalent drafting for the Deemed Marine Licence would be new sub-paragraphs to paragraph 14 as follows:

- (2) [No part of the licensed activities may be commenced until a flood emergency response plan to apply during construction of that part has been submitted to and approved by the MMO, following consultation with the Environment Agency on matters related to its functions.
- (3) Any flood emergency response plan submitted and approved under sub-paragraph (2) must (so far as applicable) be in general accordance with the flood risk assessment.
- (4) Any licensed activities must be carried out in accordance with the approved flood emergency response plan for that part, unless otherwise approved by the MMO.]

18. To assist the Examining Authority, these changes are also included in the dDCO submitted at Deadline 6 [TR030008/APP/2.1 (8)], albeit with footnotes referring to this response and that these are not considered reasonable or necessary. If the Examining Authority agrees in advance of Deadline 7, the Applicant would welcome this confirmation so that those provisions in square brackets may be deleted in the version of the dDCO submitted at Deadline 7.

17. Compulsory Acquisition and Temporary Possession

CATP 3.1

Question

Book of Reference and Land Rights Tracker

Please provide a written summary of all outstanding matters relating to compulsory acquisition and temporary possession.

Response

The Applicant has prepared written summaries in respect of the outstanding matters relating to compulsory acquisition and temporary possession for (a) individual landowners; and (b) statutory undertakers as shown on the documents appended to this response as Appendix 5 (individual landowners) and Appendix 6 (statutory undertakers).

These Appendices follow the same form as the Land Rights Tracker provided by the ExA for consistency in relation to the various column headings.

An updated Land Rights Tracker will be submitted at Deadline 7.

18. Development Consent Order

DCO 3.1

Question	Response
<p>Article 21 – Human Remains</p> <p>Whilst the matter was discussed at ISH5 and was the subject of submissions by the Applicant, since then, similar Articles have been removed by the SoS in a number of subsequently Made Orders (Sunnica, Mallard Pass and Gate Burton Energy Park). In Sunnica, the SoS felt the matter should be included in the site-specific Written Scheme of Investigation (WSI). The IGET WSI [APP-199] contains a section specifically dealing with Human Remains. Given the matter appears to be addressed through the WSI, notwithstanding the submissions already made to the Examination, explain and justify why the matter needs to be duplicated within the DCO?</p>	<p>As noted, the Applicant made a number of submissions on the necessity of Article 21 (Removal of human remains) of the dDCO at Issue Specific Hearing 5 (ISH 5), which addressed the extent to which two recent Secretary of State decisions provided any material assistance. These were summarised in the Applicant's Written Summary of ISH 5 [REP3-071] and are reproduced below for ease of reference:</p> <p style="padding-left: 40px;"><i>“The Explanatory Memorandum [REP1-005] at page 56, paragraph 8.48 explains that in the absence of a provision such as at Article 21 it would be necessary for the Applicant to meet the requirements of a number of disparate other regimes regulating the removal of human remains, in the event that any are found during the works.</i></p> <p style="padding-left: 40px;"><i>The EIA and land referencing processes undertaken for the project have not flagged up any particular likelihood of human remains. Even so, human remains sometimes do turn up where they have not been expected. For example, at Chambers Wharf during the Thames Tideway Tunnel development, the remains of a man were unearthed on the banks of the Thames. The body was not expected. However, given that the Thames has been the site of human occupation and inhabitation for hundreds of years, it is not a surprise that this could happen from time to time. The Applicant provides a newspaper article in relation to the human remains discovery at Chambers Wharf at Appendix 1.</i></p> <p style="padding-left: 40px;"><i>Such situations can be characterised as low probability but high impact events for the purposes of construction, and thus a risk. Once a body is discovered, the statutory processes must be followed to deal with it. Those processes can give rise to delay. So Article 21 is in place to allow for a clear, consolidated, efficient</i></p>

and acceptable process for handling the removal of remains should that prove necessary.

In the unlikely event that human remains are found, the Article 21 process is an acceptable way of dealing with them. There has been no suggestion either in this examination or in any others the Applicant has looked at that it has any obvious shortcomings. If no human remains are found, the process will simply not be used.

Like many provisions in DCOs Article 21's inclusion is intended to guard against unnecessary delay, difficulty and obstruction to implementation in the event that something occurs that may not be expected at the time the DCO is made but, nevertheless, remains a realistic possibility. There is therefore potentially significant public interest benefit from its inclusion, and no public interest harm. No person will benefit if it is removed and no public interest benefit will be realised by its removal.

The Applicant has identified two recent Secretary of State decision letters where provision akin to Article 21 was removed (Hynet Carbon Dioxide Pipeline Order 2024 and National Grid (Yorkshire Green Energy Enablement Project) DCO 2024). The Applicant, however, considers that those two decision letters do not provide any real assistance for the purposes of this examination and are of very limited utility as precedents.

In neither case was this matter considered in the Examiner's Report. That appears to reflect the fact that the need for inclusion of the provision was not explored or debated during the examination or subject to consideration by the ExA in either case. The Applicant has not identified any attempt to solicit the views and representations of the Applicants or Interested Parties as to whether the provision ought to be retained during the post-examination stage for both projects either.

The reasoning in both Secretary of State decision letters is extremely brief. It does not engage with the points that the Applicant has made here in ISH5 as to why

	<p><i>Article 21 should be included. It may well be that if the Applicants in those two cases had been given the opportunity to explain why they wanted their equivalent Articles to be included they would have raised similar arguments, but it seems they were not given that chance.”</i></p> <p>The Applicant sets out below the relevant extracts from the Decision Letters for the three Orders noted in DCO 3.1 which refer to the equivalent of Article 21 of the dDCO:</p> <p>Sunnica Energy Farm (paragraph 10.1, bullet point 2)</p> <p><i>“The Secretary of State has removed Article 15 from the draft Order, which sought to mandate that the Applicant remove and rebury or cremate any human remains from burial grounds within the Order limits. There are no known burial grounds within the Order limits so the Secretary of State considers this article to be unnecessary. Provision for any archaeological human remains should be included in the site-specific written scheme of investigation, as set out in the Detailed Archaeological Mitigation Strategy.”</i></p> <p>Mallard Pass Solar Farm (paragraph 9.3)</p> <p><i>“The original Article 17 (in relation to human remains and burial grounds) has been removed. There are no known burial grounds within the Order limits, and provisions for any remains should be included in the written scheme of investigation. There has been some re-numbering of other articles as a consequence.”</i></p> <p>Gate Burton Energy Park (paragraph 9.3)</p> <p><i>“The Secretary of State has removed Article 17 ‘removal of human remains’ from the draft Order, which sought to mandate that the Applicant remove and rebury or cremate any human remains from burial grounds within the Order limits. There are no known burial grounds within the Order limits so the Secretary of State</i></p>
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considers this article to be unnecessary. Provision for any human remains should be included in the written scheme of investigation, as required by paragraph 11 of Schedule 2.”

There is nothing in these extracts that alters the analysis in the Applicant's ISH 5 submissions as to why Article 21 of the dDCO is necessary, that there is no public interest benefit in its removal and there is no detriment to any person in its inclusion.

Just as with the decisions to which the Written Summary of ISH 5 above refers, the Examiners' Reports in each of those three cases did not consider this matter. Nor, again, has the Applicant identified any attempt to solicit the views and representations of the Applicants or Interested Parties in these applications' post Examination stages.

The Written Scheme of Investigation [APP-199] related to an archaeological trial trench evaluation within the proposed Order Limits which has already been completed. The Requirements of the dDCO do not therefore need to provide for submission of a written scheme of archaeological investigation and no such scheme will apply during the carrying out of the authorised project. However, even if one were to apply, such a scheme would not be a piece of legislation and so would not lawfully be capable of overriding the requirements of the existing disparate statutory regimes to which Article 21 of the dDCO refers. In other words, the inclusion of provision in a written scheme of investigation in respect of the removal of human remains simply would not address the legal purpose which the provision in Article 21 is intended to serve, and therefore cannot properly and rationally be said to make the provision unnecessary. Nor would such a written scheme of investigation be capable of replacing the existing regimes with a clear, consolidated, efficient and acceptable process as Article 21 does. If Article 21 is retained, and a written scheme of investigation were introduced for the purposes of the removal of human remains alone, it would simply align with the provisions of that Article and needlessly duplicate it. If Article 21 is not retained, and a written scheme of investigation were introduced for the purposes of the removal of human remains alone, the scheme would need to align with the disparate statutory regimes to which Article 21 of the dDCO refers (as indeed is the case at paragraph 4.91 of [APP-199] which, being

in advance of the making of the DCO, was capable only of reflecting those existing disparate regimes). A requirement for the Applicant to provide a written scheme of archaeological investigation simply to address this point would thus be incapable of providing a legally adequate justification to reject the necessity for Article 21. Such a scheme would therefore not be capable of “duplicating” Article 21. Only Article 21 can address this issue.

The extracts from the three decision letters suggest the absence of known burial grounds within Order Limits is a reason for rejecting Article 21. That is not, of course, a sufficient reason for dispensing with provision which caters for the consequences if human remains are found, as demonstrated by the Secretary of State’s conclusion in all three cases that the relevant written scheme of investigation should include provision to address this. This simply brings one back to the question of whether the separate and specific legal purpose that Article 21 is intended to serve justifies its inclusion. None of the decision letters acknowledge, let alone engage, with that question. In the absence of such known burial grounds, and none being found during trial trench evaluation, the Applicant accepts that the probability of finding remains during the carrying out of the authorised project is low. But though low probability, this would be a high impact event, and thus is a risk with serious timing and cost implications for the construction programme needed to expeditiously deliver this nationally significant infrastructure project. Particularly in circumstances where, as set out in the Explanatory Memorandum [REP5-007], it is anticipated that ammonia will be available in Europe in 2027 and, given the urgent imperative of delivering this nationally significant infrastructure project in that context, Air Products must consider all appropriate ways of maintaining an expeditious construction programme to ensure that the hydrogen production facility could be operational as soon as possible in 2027.

The Applicant therefore submits that these three decisions do not take matters any further. They do not grapple with the points it has made to date and are therefore not precedents which assist in relation to the Project. Accordingly, the Applicant considers that Article 21 should be retained.

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3 Appendices to the Applicant's Responses to the Examining Authority's Third Round of Written Questions

Appendix 1: CC3.1 R. (on the application of Finch) v Surrey CC - Supreme Court decision



Trinity Term
[2024] UKSC 20

On appeal from: [2022] EWCA Civ 187

JUDGMENT

R (on the application of Finch on behalf of the Weald Action Group) (Appellant) v Surrey County Council and others (Respondents)

before

**Lord Kitchin
Lord Sales
Lord Leggatt
Lady Rose
Lord Richards**

**JUDGMENT GIVEN ON
20 June 2024**

Heard on 21 and 22 June 2023

Appellant
Marc Willers KC
Estelle Dehon KC
Ruchi Parekh
(Instructed by Leigh Day (London))

1st Respondent
Harriet Townsend
Alex Williams
(Instructed by Surrey County Council Legal & Democratic Services)

2nd Respondent
David Elvin KC
Matthew Fraser
(Instructed by Hill Dickinson LLP (Manchester))

3rd Respondent
Richard Moules KC
Nick Grant
(Instructed by Government Legal Department)

1st Intervener – Friends of the Earth (written submissions only)
Paul Brown KC
Nina Pindham
(Instructed by Richard Buxton Solicitors)

2nd Intervener – Greenpeace UK (written submissions only)
Ruth Crawford KC
Richard Harwood KC
David Welsh
(Instructed by Harper Macleod LLP (Edinburgh))

3rd Intervener – Office for Environmental Protection (written submissions only)
Stephen Tromans KC
Ruth Keating
(Instructed by Head of Litigation and Casework)

4th Intervener – West Cumbria Mining Ltd (written submissions only)
Gregory Jones KC
Alexander Greaves
(Instructed by Ward Hadaway (Newcastle))

LORD LEGGATT (with whom Lord Kitchin and Lady Rose agree):

1. Introduction

1. Anyone interested in the future of our planet is aware by now of the impact on its climate of burning fossil fuels - chiefly oil, coal and gas. When fossil fuels are burnt, they release carbon dioxide and other “greenhouse gases” - so called because they act like a greenhouse in the earth’s atmosphere, trapping the sun’s heat and causing global surface temperatures to rise. According to the United Nations Environment Programme (“UNEP”) Production Gap Report 2023, p 3, close to 90% of global carbon dioxide emissions stem from burning fossil fuels.

2. The whole purpose of extracting fossil fuels is to make hydrocarbons available for combustion. It can therefore be said with virtual certainty that, once oil has been extracted from the ground, the carbon contained within it will sooner or later be released into the atmosphere as carbon dioxide and so will contribute to global warming. This is true even if only the net increase in greenhouse gas emissions is considered. Leaving oil in the ground in one place does not result in a corresponding increase in production elsewhere: see UNEP's 2019 Production Gap Report, p 50, which reported, based on studies using elasticities of supply and demand from the economics literature, that each barrel of oil left undeveloped in one region will lead to 0.2 to 0.6 barrels not consumed globally over the longer term.

3. Before a developer is allowed to proceed with a project which is likely to have significant effects on the environment, legislation in the United Kingdom and many other countries requires an environmental impact assessment (“EIA”) to be carried out. The object of an EIA is to ensure that the environmental impact of a project is exposed to public debate and considered in the decision-making process. The legislation does not prevent the competent authority from giving development consent for projects which will cause significant harm to the environment. But it aims to ensure that, if such consent is given, it is given with full knowledge of the environmental cost.

4. This appeal raises a question about whether the greenhouse gas (“GHG”) emissions which will occur when oil extracted from an oil well, after being refined, is burnt as fuel must be included in the EIA required before development consent may be given for the extraction of the oil. The answer to this question depends on whether, for the purpose of the applicable legislation, the effect on climate measured by the GHG emissions that will occur upon combustion of the oil is an effect of the project on climate.

5. The competent authority, Surrey County Council, initially considered that the EIA for a project to extract oil for commercial purposes at a well site in Surrey should

include an assessment of the combustion emissions from the oil to be produced. The council advised the developer that its environmental statement describing the likely significant effects of the project on the environment should assess the effect of the project on climate and “should consider, in particular, the global warming potential of the oil and gas that would be produced by the proposed well site.” But later the council changed its mind. It accepted as sufficient an environmental statement which assessed only direct releases of greenhouse gases at the project site over the lifetime of the project and contained no assessment of the impact on climate of the combustion of the oil. In consequence, no information about the combustion emissions was made available to the public or considered by the council before it granted development consent for the project.

6. The issue which this court must now decide is whether it was lawful for the council to restrict the scope of the EIA in this way. In defence of the council’s decision to do so, two alternative arguments are made. First, it is said that as a matter of law the combustion emissions could not be regarded as environmental effects of the project within the meaning of the legislation. So the council was right to omit them from the EIA. Alternatively, it is said that whether the combustion emissions were effects of the project was a matter of evaluative judgment for the council. Hence the council’s decision not to assess the combustion emissions can be challenged only on the limited grounds on which a court can review an exercise of discretion by a public authority. Here, it is argued, there is no proper ground for such a challenge.

7. I am not persuaded by either argument. It is agreed that the project under consideration involves the extraction of oil for commercial purposes for a period estimated at 20 years in quantities sufficient to make an EIA mandatory. It is also agreed that it is not merely likely, but inevitable, that the oil extracted will be sent to refineries and that the refined oil will eventually undergo combustion, which will produce GHG emissions. It is not disputed that these emissions, which can easily be quantified, will have a significant impact on climate. The only issue is whether the combustion emissions are effects of the project at all. It seems to me plain that they are.

8. Before explaining my reasons for so concluding, I must identify the applicable legislative provisions and say a little more about the factual and procedural background to this appeal.

2. The legislation

9. The legislation which the council had to apply was contained in the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/571). I will refer to these as “the 2017 Regulations”. The 2017 Regulations are one of a number of UK statutory instruments designed to implement Directive 2011/92/EU of

the European Parliament and of the Council, as amended by Directive 2014/52/EU. I will refer to Directive 2011/92/EU, as amended, as “the EIA Directive” and to Directive 2014/52/EU as “the 2014 Directive”.

10. We are concerned with the law as it stood in September 2019 when the council’s decision to grant development consent for the project was taken. This was before the United Kingdom left the European Union. It is not suggested that the analysis of this case is affected by any changes made to English law as a result of Brexit.

11. The 2017 Regulations are to be interpreted in line with the EIA Directive which they were intended to implement. In these circumstances it is appropriate to focus directly on the provisions of the EIA Directive: see eg *R (Friends of the Earth Ltd) v Secretary of State for Transport* [2020] UKSC 52; [2021] PTSR 190, para 136.

The EIA Directive

12. The principle underpinning the EIA Directive, as stated in recital (7), is that:

“Development consent for public and private projects which are likely to have significant effects on the environment should be granted only after an assessment of the likely significant environmental effects of those projects has been carried out.”

“Development consent” is defined in article 1 as “the decision of the competent authority or authorities which entitles the developer to proceed with the project.” The term “project” is widely defined and specifically includes “the extraction of mineral resources.”

13. The general obligation imposed by the EIA Directive is set out in article 2(1):

“Member States shall adopt all measures necessary to ensure that, before development consent is given, projects likely to have significant effects on the environment by virtue, *inter alia*, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects on the environment. Those projects are defined in article 4.”

14. Certain projects - such as oil refineries, power stations and waste disposal installations among others - are regarded as inherently likely to have significant effects on the environment and therefore automatically require development consent and an EIA: see article 4(1). These projects are listed in Annex I. The list includes, at item 14:

“Extraction of petroleum and natural gas for commercial purposes where the amount extracted exceeds 500 tonnes/day in the case of petroleum and 500 000 cubic metres/day in the case of gas.”

It is agreed that the project here falls within this description. Development consent for the project and an EIA were therefore required.

15. As defined in article 1(2)(g) of the EIA Directive, “environmental impact assessment” is a process consisting of: (i) the preparation of an EIA report by the developer; (ii) the carrying out of consultations, including public consultation; (iii) the examination by the competent authority of the information received; (iv) a reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of its examination; and (v) the integration of this reasoned conclusion into any decisions taken by the competent authority.

16. Article 3(1) requires the EIA to “identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project” on various factors, which include “climate.” Article 5(1) specifies information which the developer must provide in an EIA report where an EIA is required. This information includes “a description of the likely significant effects of the project on the environment” and any additional information specified in Annex IV relevant to the particular project or type of project in question: see article 5(1)(b) and (f). The information specified in Annex IV includes, at para 5, a “description of the likely significant effects of the project on the environment resulting from, inter alia”:

“...

(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) ...”

17. Annex IV, para 5, further stipulates:

“The description of the likely significant effects on the factors specified in article 3(1) should cover the direct effects and any

indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project.”

Public Participation

18. One of the objects of the EIA Directive is to provide for public participation in environmental decision-making.

19. The European Union and the United Kingdom are both parties to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, known as “the Aarhus Convention”, which was adopted in 1998 and ratified by the EU and the UK in 2005. As its full name indicates, this international agreement is designed to secure three rights in relation to environmental matters: a right of access to information, a right of public participation in decision-making, and a right of access to justice. The Aarhus Convention was itself partly based on Council Directive 85/337/EEC of 27 June 1985, which introduced the EIA procedure within the European Economic Community (as it was then called). That directive was amended after the Aarhus Convention came into force by Directive 2003/35/EC to implement obligations arising under the Aarhus Convention and was later codified in the EIA Directive. Recital (18) to the EIA Directive refers to the Aarhus Convention and recital (19) records that:

“Among the objectives of the Aarhus Convention is the desire to guarantee rights of public participation in decision-making in environmental matters in order to contribute to the protection of the right to live in an environment which is adequate for personal health and wellbeing.”

20. Obligations arising under the Aarhus Convention have been built into articles 6, 8 and 9 of the EIA Directive. Thus, article 6 imposes obligations on Member States to inform the public early in the decision-making procedure of various matters, which include details of the arrangements made for public participation in the process; to make available to the public concerned the information gathered where an EIA is required; and to give the public concerned early and effective opportunities to express comments and opinions before the decision on the request for development consent is taken. The “public concerned” is defined in article 1(2)(e) as “the public affected or likely to be affected by, or having an interest in, the environmental decision-making procedures” required by the EIA Directive and specifically includes NGOs promoting environmental protection. Article 8 of the EIA Directive requires the results of such public consultation to be “duly taken into account” in the decision-making procedure; and article 9(1) provides that the public must be promptly informed of the decision taken and of “the

main reasons and considerations on which the decision is based, including information about the public participation process.”

21. The rationale underpinning these public participation requirements is expressed in recital (16) to the EIA Directive:

“Effective public participation in the taking of decisions enables the public to express, and the decision-maker to take account of, opinions and concerns which may be relevant to those decisions, thereby increasing the accountability and transparency of the decision-making process and contributing to public awareness of environmental issues and support for the decisions taken.”

Two important ideas are included within this rationale. First, public participation is necessary to increase the democratic legitimacy of decisions which affect the environment. Second, the public participation requirements serve an important educational function, contributing to public awareness of environmental issues. Guaranteeing rights of public participation in decision-making and promoting education of the public in environmental matters does not guarantee that greater priority will be given to protecting the environment. But the assumption is that it is likely to have that result, or at least that it is a prerequisite. You can only care about what you know about.

The 2014 amendments

22. As well as the provisions implementing the Aarhus Convention, it is relevant to note amendments to the EIA Directive made by the 2014 Directive. These included the incorporation in Annex IV of climate and GHG emissions as specific factors which must be addressed in the description of the likely significant effects of the project on the environment (see para 16 above).

23. The rationale for these amendments is explained in recitals (7) and (13) to the 2014 Directive. Recital (7) stated:

“Over the last decade, environmental issues, such as ... climate change ... have become more important in policy making. They should therefore also constitute important elements in assessment and decision-making processes.”

Recital (13) stated:

“Climate change will continue to cause damage to the environment and compromise economic development. In this regard, it is appropriate to assess the impact of projects on climate (for example greenhouse gas emissions) and their vulnerability to climate change.”

24. Further background to the amendments appears from a proposal to amend the EIA Directive sent by the European Commission to the Council on 26 October 2012, accompanied by an impact assessment, and from *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* published by the Commission in 2013 (“the 2013 Guidance”) in anticipation of the relevant amendments being made. These documents explain that, although the EIA Directive had previously included “climate” as a factor specified in article 3(1), experience had shown that climate change issues were not being adequately identified and assessed. One of the aims of the 2014 Directive was to change this, including by the incorporation of an explicit requirement to consider GHG emissions. The aim of the 2013 Guidance was to help Member States improve the way in which climate change (and biodiversity) issues were integrated into the EIA process.

The 2017 Regulations

25. The EIA Directive has been transposed into English law through a series of statutory instruments applicable to different types of project for which, under the EIA Directive, development consent and an EIA are required. There are separate statutory regimes for - to give just a few examples - projects related to forestry, harbour works, marine works, pipeline works, offshore petroleum works and nuclear reactor decommissioning works.

26. The regulations applicable to projects for offshore petroleum production in an amount exceeding 500 tonnes per day (and therefore falling within item 14 of Annex I to the EIA Directive) are the Offshore Petroleum Production and Pipe-lines (Assessment of Environmental Effects) Regulations 1999 (SI 1999/360). Under those regulations, the authority responsible for deciding whether to grant development consent and for carrying out an EIA when required is the Secretary of State.

27. In the case of projects for onshore petroleum production (and many other types of project), the United Kingdom has chosen to implement the EIA Directive through the town and country planning regime, by way of the 2017 Regulations. The responsibility for deciding whether to grant development consent and for carrying out an EIA when required is conferred by the 2017 Regulations on the “relevant planning authority” which is, broadly speaking, the body responsible for determining an application for planning permission for the development. Where the development involves the

extraction of oil or other minerals, this is the county council for the area in which it is proposed that the extraction will take place.

28. I pause to note that the EIA Directive did not oblige the UK to adopt this approach. Article 2(2) of the EIA Directive states that the EIA “may be integrated into the existing procedures for development consent to projects in the Member States” or into “other procedures or into procedures to be established to comply with the aims of [the] Directive.” There is nothing in the EIA Directive which prevented the UK, if it thought necessary or fit, from establishing a national regime for decisions whether to give development consent for projects for onshore oil production - just as the UK has done in relation to projects for offshore oil production. I will return to this point when addressing a suggestion that, because the public authority responsible for granting development consent here is a county council, the EIA process cannot require an assessment of the combustion emissions, as such effects on climate are properly considered at a national level. A short answer is that this looks at the matter the wrong way round. If (which I do not accept) a county council cannot carry out EIAs for projects for onshore petroleum production that are adequate to comply with the aims of the EIA Directive, then a different procedure should be established - if necessary, at a national level - that will achieve such compliance.

29. Regulation 3 of the 2017 Regulations enacts the basic rule that:

“The relevant planning authority, the Secretary of State or an inspector must not grant planning permission or subsequent consent for EIA development, unless an EIA has been carried out in respect of that development.”

The definition of “EIA development” includes (subject to exemptions not relevant in this case) development of a description mentioned in Schedule 1 to the 2017 Regulations, which reproduces Annex I to the EIA Directive. It therefore encompasses the project for the extraction of oil which is the subject of this case.

30. The 2017 Regulations contain provisions which mirror the provisions of the EIA Directive referred to at paras 14-17 above. The EIA report which under article 5(1) of the EIA Directive the developer must prepare is referred to in the 2017 Regulations as an “environmental statement.”

3. Factual background

The project

31. The relevant “EIA development” in this case is a project to expand oil production from a well site at Horse Hill near Horley in Surrey. The developer, a company called Horse Hill Developments Ltd, applied to Surrey County Council, as the relevant mineral planning authority, for planning permission to retain and extend the existing well site (comprising two wells) and drill four new wells, and to extract hydrocarbons from the six wells for commercial production. The plan was to carry out the project over 25 years in six phases, starting with construction works to modify the well site, drill the new wells and install facilities for exporting crude oil from the site, and ending with decommissioning and site restoration. The relevant phase is phase 4, which encompasses the extraction of oil from the wells over 20 years. It is estimated that over this period the total quantity of oil produced could be of the order of 3.3 million tonnes.

The scope of the environmental statement

32. The 2017 Regulations (in regulation 15, which implements article 5(2) of the EIA Directive) allow the developer, before making an application for planning permission for EIA development, to ask the relevant planning authority for a “scoping opinion” on the information to be provided in the environmental statement. There is nothing which prevents the planning authority from deciding to grant planning permission if the environmental statement does not conform to the scoping opinion. But there is an expectation that, where there is a scoping opinion, the environmental statement will be based on it. This is explicit in regulation 18(4), giving effect to article 5(1), which states that, where a scoping opinion has been issued, the environmental statement “must ... be based” on that opinion.

33. In this case the developer requested, and the council issued, a scoping opinion. The scoping opinion said (in para 3.13) that “the indirect effects associated with the production and sale of fossil fuels which would likely be used in the generation of heat or power, consequently giving rise to carbon emissions, cannot be dismissed as insignificant.” This led (in para 3.14) to the following recommendation:

“Given the nature of the proposed development, which is concerned with the production of fossil fuels, the use of which will result in the introduction of additional greenhouse gases into the atmosphere, it is recommended that the submitted EIA include an assessment of the effect of the scheme on the climate. *That assessment should consider, in particular, the*

global warming potential of the oil and gas that would be produced by the proposed well site.”
(emphasis added)

34. The developer did not comply with this recommendation. The environmental statement submitted by the developer contained no information about the global warming potential of the oil that would be produced by the proposed well site. The section dealing with “Greenhouse Gas Emissions and The Climate” stated that:

“The scope of the assessment is confined to the direct releases of greenhouse gases from within the well site boundary resulting from the site’s construction, production, decommissioning and subsequent restoration over the lifetime of the proposed development.”

35. The decision to restrict the scope of the assessment in this way was explained (in paras 121 and 122 of the environmental statement) on these grounds:

“121. ... The essential character of the proposed development is the extraction and production of hydrocarbons and does not extend to their subsequent use by facilities and process beyond the planning application boundary and outwith the control of the site operators.

122. The assessment methodology pays regard to national planning policy and guidance that establishes that decision-makers should ‘focus on whether the development is an acceptable use of land, rather than on control of processes or emissions where these are subject to approval under pollution control regimes’. These non-planning regimes regulate hydrocarbon development and other downstream industrial processes and decision-makers can assume that these regimes will operate effectively to avoid or mitigate the scope for material environmental harm.”

36. As I read these paragraphs (in agreement with Moylan LJ at para 116 of the Court of Appeal judgment), the developer was giving two, or possibly three, reasons for confining the scope of the assessment to “the direct releases of greenhouse gases from within the well site boundary” contrary to the council’s scoping opinion. The first reason (or pair of reasons) was that it was unnecessary to assess GHG emissions resulting from the subsequent processing and use of the hydrocarbons beyond the well site boundary because such processes and use (a) were not part of the proposed

development and (b) were “outwith the control of the site operators.” The other reason given (in para 122) was that the planning authority should not concern itself with GHG emissions that will occur “downstream” when the oil produced from the wells is processed and used because such processes are regulated by other, non-planning regimes, and the planning authority can assume that these regimes will operate effectively to avoid or mitigate the scope for material environmental harm.

The council’s decision

37. The council accepted the developer’s explanation for not preparing an environmental statement which complied with the scoping opinion. The environmental statement was reviewed by a council officer, Dr Jessica Salder. Her review noted (at para 5.15) that the assessment of the impact of the proposed development on GHG emissions and climate change was limited to “the direct greenhouse gas emissions” of the development and operation of the proposed well site and that “[t]he potential contribution of the hydrocarbons that would be produced over the lifetime of the well site is not covered.” The review also noted that the reasons for excluding those emissions were set out in paras 121 and 122 of the environmental statement (quoted above) and said that the council accepted the justification given there for excluding consideration of the global warming potential of the produced hydrocarbons from the scope of the EIA process.

38. At a meeting on 11 September 2019, the council’s planning and regulatory committee decided that planning permission should be granted for the project. The committee had sight of an officer’s report which included consideration of the effect of the development on climate. But because of the council’s acceptance of the approach taken in the developer’s environmental statement, this report ignored the combustion emissions. This limitation in the scope of the EIA was recognised, even if only obliquely, in the conclusion (at para 97 of the report) that:

“the proposed development would not give rise to significant impacts on the climate as a consequence of the emissions of greenhouse gases *directly* attributable to the implementation and operation of the scheme.” (emphasis added)

The report said nothing about impacts on the climate as a consequence of GHG emissions *indirectly* attributable to the operation of the well site, as no assessment had been made of those indirect effects of the project.

4. Classifying GHG emissions

39. It is convenient at this stage to introduce some terminology which, although not used in the EIA Directive and 2017 Regulations, has become widely used in reporting GHG emissions and was used in the judgments of the Court of Appeal. The terminology derives from the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (the “GHG Protocol”). This is a document published by the Greenhouse Gas Protocol Initiative, an international initiative involving businesses, NGOs, governments and others. Its aim is to develop internationally accepted GHG accounting and reporting standards for business and to promote their broad adoption.

40. The GHG Protocol classifies GHG emissions using three categories, labelled “scope 1”, “scope 2” and “scope 3”. Scope 1 emissions are defined as direct GHG emissions that occur from sources that are owned or controlled by an entity. Scope 2 emissions are a special category of indirect emissions. This category consists of GHG emissions from the generation of purchased electricity consumed by an entity. Scope 2 emissions occur at the facility where the electricity is generated. Scope 3 encompasses all other indirect emissions. Scope 3 emissions are consequences of the activities of the entity but (like scope 2 emissions) occur from sources not owned or controlled by the entity. Some examples of scope 3 activities given in the GHG Protocol (at p 25) are extraction and production of purchased materials, transportation of sold products, and use of sold products and services.

41. In November 2021 the International Financial Reporting Standards (“IFRS”) Foundation announced the formation of the International Sustainability Standards Board. The Board’s aim is to develop international standards for the disclosure of information related to sustainability. Sustainability is defined very broadly and includes direct and indirect effects of the entity’s business on the environment. So far two standards have been issued: IFRS S1 and IFRS S2. IFRS S1 establishes general requirements for disclosure of sustainability-related financial information. IFRS S2 is concerned with disclosure of climate-related information. Among other information, IFRS S2 requires entities to disclose their absolute gross GHG emissions during the reporting period, classified as scope 1, scope 2 and scope 3 GHG emissions. Scope 3 GHG emissions are themselves required to be classified in 15 categories derived from the GHG Protocol. These categories include “downstream transportation and distribution”, “processing of sold products” and “use of sold products”.

42. The UK Government is currently consulting on whether to endorse IFRS S2 for use in the UK and, in particular, whether to introduce reporting requirements for UK companies which include an obligation to report their scope 3 GHG emissions: see “Scope 3 Emissions in the UK Reporting Landscape: A Call for Evidence” (October 2023).

43. Using the taxonomy adopted in the GHG Protocol Standard and IFRS S2, the council’s decision to confine the scope of the assessment of GHG emissions to “the direct releases of greenhouse gases from within the well site boundary” (see para 37 above) meant that only scope 1 GHG emissions were assessed. That is, only direct GHG emissions from sources within the control of the developer / site operator were included in the EIA. No indirect GHG emissions resulting from the project but occurring from sources outside the control of the developer / site operator were assessed. As it happens, there were no relevant scope 2 GHG emissions. This is because the project was intended to generate its own electricity. There was therefore no plan to consume any purchased electricity generated at facilities elsewhere. So the GHG emissions from the generation of electricity used in the operation of the well site would all be scope 1 GHG emissions. The combustion emissions which are the centre of controversy here are scope 3 GHG emissions, as they are indirect GHG emissions not included in scope 2. Under IFRS S2 they fall within scope 3, category (11): emissions from the use of sold products.

5. These proceedings

The claim

44. The claimant, who lives near the site and represents an association called the Weald Action Group, has brought this claim for judicial review of the council’s decision to grant planning permission for the project. Her primary ground of challenge (and the only one still relevant on this appeal) is that the council did not comply with the obligations imposed by the EIA Directive and the 2017 Regulations because, in carrying out the EIA required for the project, it failed to assess the combustion emissions that will result from the oil to be produced. There are three defendants to the claim, all of whom oppose it. They are the council, the developer and the Secretary of State for Levelling Up, Housing and Communities.

The High Court decision

45. In the High Court Holgate J dismissed the claim for reasons given in a characteristically clear and comprehensive judgment: [2020] EWHC 3566 (Admin); [2021] PTSR 1160. The judge found, at para 69, that it is impossible to say where the oil produced would be refined or used, and whether this would be in the United Kingdom or abroad. But the judge also made this important finding, at para 100, which is an agreed fact on this appeal:

“... it is *inevitable* that oil produced from the site will be refined and, as an end product, will eventually undergo combustion, and that that combustion will produce GHG emissions.” (emphasis added)

46. Even so, the judge concluded that assessment of the combustion emissions was, as a matter of law, incapable of falling within the scope of the EIA required by the 2017 Regulations: see para 126. Alternatively, if that was wrong and it was legally possible to take the view that the combustion emissions fell within the scope of the required EIA, the judge thought it impossible to say that the council's opinion that the combustion emissions were not indirect effects of the proposed development was irrational or otherwise unlawful: see paras 127, 132.

Decision of the Court of Appeal

47. The Court of Appeal, by a majority, affirmed the judge's decision, on the basis of his alternative reasoning: [2022] EWCA Civ 187; [2022] PTSR 958. The majority (Sir Keith Lindblom, Senior President of Tribunals, and Lewison LJ) did not agree with the judge that, as a matter of law, the combustion emissions were incapable of being regarded as effects on climate requiring assessment in the EIA. In their view, whether the combustion emissions are indirect effects of the extraction of the oil which therefore had to be assessed depends on whether there was a "sufficient causal connection" between the two, which they saw as a matter of fact and evaluative judgment for the council: see paras 43, 57, 60, 63, 141. The Senior President was satisfied that, in the circumstances of this case, the council had a reasonable and lawful basis for excluding the combustion emissions from the EIA: paras 60-66. Lewison LJ was more doubtful but ultimately concluded, "not without hesitation", that the reasons given by the council for its decision "just about pass muster": para 149.

48. Moylan LJ dissented. He agreed with the majority that whether the combustion emissions needed to be assessed was a matter to be determined by the council. But he considered that cogent reasons would be required to exclude those GHG emissions from assessment and that the reasons given by the council were legally flawed: paras 129-130.

This appeal

49. On this further appeal by the claimant, the parties' positions are as follows:

(i) The claimant contends that, on the proper interpretation of the legislation, the "effects of the project" on climate which the council needed to assess as part of the EIA included the combustion emissions.

(ii) Two of the defendants - the council and the Secretary of State - invite this court to endorse the analysis of the majority of the Court of Appeal (and alternative approach of the judge) that the council was entitled to decide, as a

matter of evaluative judgment, that the combustion emissions were not “effects of the project” on climate.

(iii) The developer submits (as its primary position) that the judge was right to hold that the combustion emissions cannot as a matter of law be regarded as “effects of the project” on climate.

50. With the court’s permission, four interveners have also made written submissions. I have found particularly helpful submissions made by the Office for Environmental Protection. This is a public body established under section 22 of the Environment Act 2021 and sponsored by the Department for the Environment, Food and Rural Affairs. Its principal objective is to contribute to environmental protection and the improvement of the natural environment.

51. Two of the interveners, Friends of the Earth Ltd and Greenpeace UK, support the claimant’s case. Another, West Cumbria Mining Ltd, supports the approach of the majority of the Court of Appeal. The submissions made by the Office for Environmental Protection do not take sides between the parties but explain the reasons for its concern that the decisions of the lower courts, if upheld, “could have an adverse effect on sound environmental decision making and hence on environmental protection and the improvement of the natural environment.”

6. The issue

52. The overall issue in the appeal is whether, under the EIA Directive and the 2017 Regulations, it was lawful for the council not to include the combustion emissions in the EIA for the proposed project.

53. The council could not lawfully grant planning permission for the project unless an EIA had been carried out which complied with the obligation to “identify, describe and assess in an appropriate manner ... the direct and indirect significant effects” of the project on (among other factors) “climate”: see regulation 4(2), reflecting article 3(1) of the EIA Directive. If the significant effects of the project on climate include the combustion emissions, the council was therefore obliged to assess them as part of the EIA and its failure to do so renders the decision to grant planning permission unlawful. On the other hand, if (as the judge held) the combustion emissions were incapable as a matter of law of being regarded as “effects of the project” on climate within the meaning of the legislation, then the council was right not to assess them and its decision to grant planning permission was lawful. Its decision was also lawful if (as the majority of the Court of Appeal held) the question whether the combustion emissions are “effects of the project” on climate within the meaning of the legislation was a matter of

evaluative judgment for the council and the council's reasons for leaving the combustion emissions out of account were lawful.

7. The meaning and application of legislation

54. The approach taken by the Court of Appeal raises a question about the respective roles of the competent authority and the court when a dispute arises about whether the authority has correctly applied legislation to the facts of a particular case.

55. Interpreting the law, by establishing the meaning and legal effect of legislation, is the court's role. If a decision-making authority bases its decision on an interpretation of legislation which the court concludes was mistaken, then the authority makes an error of law and its decision is unlawful.

56. Interpreting a legislative provision requires the court to identify, from the language and purpose of the legislation, the criteria to be applied in deciding whether the facts of any individual case fall within its scope. These criteria may be so precise that, when applied to the facts of a given case, they rationally yield only one answer. But sometimes, as Lord Mustill pointed out in *R v Monopolies and Mergers Commission, Ex p South Yorkshire Transport Ltd* [1993] 1 WLR 23, 32, the criteria are sufficiently imprecise that there is room for different decision-makers, each acting rationally, to reach different answers. In such a case the court will not interfere with the decision taken unless it is "irrational" in the sense either that it is outside the range of reasonable decisions open to the decision-maker or that there is a demonstrable flaw in the reasoning which led to the decision. Examples of such a flaw would be that significant reliance was placed on an irrelevant consideration, or that there was no evidence to support an important step in the reasoning, or that the reasoning involved a serious logical or methodological error: see eg *R (Law Society) v Lord Chancellor* [2018] EWHC 2094 (Admin); [2019] 1 WLR 1649, para 98.

57. The question in *South Yorkshire Transport* was whether, for the purpose of particular competition legislation, an area of South Yorkshire in which a transport company was providing bus services constituted "a substantial part of the United Kingdom." The House of Lords held that, even after eliminating inappropriate senses of the term "substantial", the meaning was broad enough to call for an exercise of judgment and that the conclusion arrived at by the decision-maker was well within the "permissible field of judgment."

58. The term "substantial" is intrinsically vague because, in the absence of some further, more precise criterion, there will be cases in which the question whether the term applies has no answer on which reasonable people who understand the meaning of the term could all be expected to agree. The same is true of the term "significant" which

is used in article 3(1) and other provisions of the EIA Directive. Deciding whether an effect of a project on the environment is “significant” clearly requires a value judgment and carries the potential for cases to arise in which different decision-makers may legitimately reach different conclusions without it being possible to say that any of them has made an error in interpreting or applying the term.

59. The concept of “the effects of a project” on the environment is not - or at least not obviously - vague in this way. One might think that whether a particular environmental impact is or is not an effect of the project is a question which, in principle, admits of only one answer. In my view, in the great majority of cases that impression is indeed correct. I think it is true here. But it will be necessary to consider the contrary view taken by the Court of Appeal that whether something is an “effect of the project” is a matter of degree which requires the decision-making authority to evaluate whether there is a “sufficient causal connection” between the project and the putative effect. The concept of a “sufficient causal connection” is intrinsically vague. If no more precise criterion can be identified, it would leave a wide range of cases in which the question whether a particular environmental impact is or is not an “effect of the project” has no single right or wrong answer.

60. As an initial comment, this would be a very unsatisfactory state of affairs. It would mean that in cases of the present kind there would be no consistency, or means of ensuring consistency, between decisions made by different planning authorities when faced with similar issues, or even between decisions made by the same authority on different occasions in relation to similar projects. That would be all the more regrettable when issues relating to climate change and the extent to which disclosure of information about GHG emissions should be required are becoming more and more salient in policy-making and public debate. To treat inconsistent approaches to questions of whether and when direct or indirect GHG emissions should be included in EIAs as equally valid would be a form of arbitrary administration. The fact that the interpretation of the EIA Directive favoured by the Court of Appeal would have such an unreasonable result is itself a good reason to reject it.

8. Interpreting the EIA Directive

61. In interpreting the EIA Directive, certain core principles are not in dispute. To determine what is meant by the “direct and indirect ... effects of a project”, it is necessary to examine the language and in particular the purpose of the EIA Directive: *R v North Yorkshire County Council, Ex p Brown* [2000] 1 AC 397, 401. The Court of Justice of the European Union (“CJEU”) has repeatedly emphasised that the EIA Directive is wide in scope and its purpose very broad: see eg *Aannemersbedrijf P K Kraaijeveld BV v Gedeputeerde Staten van Zuid-Holland* (Case C-72/95) [1997] All ER (EC) 134, para 31; *World Wildlife Fund (WWF) v Autonome Provinz Bozen* (Case C-435/97) [1999] ECR I-5613, para 40; *Abraham v Wallonia* (Case C-2/07) [2008] Env

LR 32, paras 32 and 42. Concisely stated, that purpose is to ensure that decisions whether to give development consent for projects which may affect the environment are made on the basis of full information: *R v North Yorkshire County Council, Ex p Brown* [2000] 1 AC 397, 404; *Berkeley v Secretary of State for the Environment* [2001] 2 AC 603, 615.

62. It is also important to keep in mind that the legislation is essentially procedural in nature. It is not concerned with the substance of the decision whether to grant development consent but with how the decision is taken. Thus, as the House of Lords held in *Berkeley*, it is no answer to a challenge based on failure to carry out an EIA that complies with the EIA Directive to say that complying with the EIA Directive would not have affected the decision. It is essential to the validity of the decision that, before it is made, there has been a systematic and comprehensive assessment of the likely significant effects of the project on the environment in accordance with the EIA Directive. As well explained by one writer on the subject:

“EIA is not a procedure for preventing actions with significant environmental impacts from being implemented, although in certain circumstances this could be the appropriate outcome of the process. Rather the intention is that actions are authorised in the full knowledge of their environmental consequences.”

See Christopher Wood, *Environmental Impact Assessment: A Comparative Review*, 2nd ed (2002), p 3.

63. As noted earlier, public participation is also integral to the process of assessment. This was also emphasised in *Berkeley*, where Lord Hoffmann stated, at p 615:

“The directly enforceable right of the citizen which is accorded by the [EIA] Directive is not merely a right to a fully informed decision on the substantive issue. It must have been adopted on an appropriate basis and that requires the inclusive and democratic procedure prescribed by the Directive in which the public, however misguided or wrongheaded its views may be, is given an opportunity to express its opinion on the environmental issues.”

64. With these principles in mind, I turn to the key question of what, on the proper interpretation of the EIA Directive, is meant by the “direct and indirect ... effects of a project” on the factors specified in article 3(1) - and, in particular, on “climate” - which the EIA is required to identify, describe and assess.

9. What are “effects of a project”?

65. What are or are not “effects of a project” is, to state the obvious, a question of causation. An effect is the obverse of a cause.

Causation in fact

66. Whether one event or state of affairs (Y) is an effect of another event or state of affairs (X) - or, to say the same thing the other way round, whether X is a cause of Y - is in the first place a question of fact. To determine whether two events are causally connected, we apply scientific knowledge, understanding of human behaviour and other knowledge about the world. Such knowledge may of course increase as new research is undertaken and new discoveries are made. Understanding of climate change is a good illustration. Until quite recently it was uncertain and controversial whether global temperatures have been rising as a result of human activities. But there is now overwhelming scientific proof of this phenomenon demonstrating the past, present and likely future effects on climate of, among other human activities, burning fossil fuels to generate energy.

Causation in law

67. Establishing that, as a matter of fact, there is a causal relationship between events X and Y, does not by itself answer the question whether, as a matter of law, X is to be regarded as a cause of Y (and Y as an effect of X). To answer that question, it is necessary to understand the purpose for which the question is being asked: see eg *Environment Agency (formerly National Rivers Authority) v Empress Car Co (Abertillery) Ltd* [1999] 2 AC 22, 29-31.

68. Depending on the context, various tests of causation may be applied, some more demanding than others. A test often used at least as a minimum requirement is whether X is a necessary condition for the occurrence of Y. This is known by lawyers as the “but for” test because one simple way of expressing it is to ask: would event Y have occurred but for the occurrence of event X? The “but for” test is generally seen as a weak test of causation because, in any given situation, many events (or states of affairs) will satisfy the “but for” test which would not usually be regarded as causes of the event under consideration: see eg *Financial Conduct Authority v Arch Insurance (UK) Ltd* [2021] UKSC 1; [2021] AC 649, para 181.

69. The strongest possible test of causation, which is seldom satisfied when questions of causation arise in law, requires the occurrence of event X to be both a necessary and sufficient condition for the occurrence of Y. If X is a sufficient cause of

Y, then every time X happens Y will always follow. This is the kind of unbreakable connection that exists, for example, where laws of physics, such as Newton's laws of motion, operate.

70. An example of a test not as strong as this but much stronger than the “but for” test is the interpretation placed on pollution control legislation in the *Environment Agency* case mentioned earlier. The legislation made it an offence to cause polluting matter to enter controlled waters. Diesel oil stored in a tank in the defendant's yard had overflowed into a river but only because an outlet tap without a lock had been turned on by a person unknown. The question was whether the defendant had caused the oil to enter the river. The House of Lords held that the criterion for identifying which intervening acts and events negative causal connection for this purpose was whether the intervening act or event was a matter of ordinary occurrence or was something extraordinary. If, as on the facts of that case, the third party act which was the immediate cause of the pollution was a matter of ordinary occurrence, it should not be regarded as negating the causal effect of the defendant's acts. The proper conclusion would therefore be that the defendant had caused the polluting matter to enter the river.

71. A similar test applies in insurance law where, unless the insurance policy otherwise provides, the insurer is liable only for losses “proximately” caused by a peril insured against. As explained in *Financial Conduct Authority v Arch Insurance*, paras 164-168, the term “proximate” means “real or efficient” and whether the occurrence of an insured peril was the proximate (or efficient) cause of the loss involves making a judgment as to whether it made the loss inevitable - if not, which could seldom if ever be said, in all conceivable circumstances - then in the ordinary course of events. For this purpose, human actions are not generally regarded as negating causal connection, provided at least that those actions were not wholly unreasonable or erratic.

Predicting likely effects

72. Typically, when questions of causation arise in law the inquiry involves looking backwards to determine whether one past event caused another past event. In determining the required scope of an EIA, however, the inquiry is forward-looking. The question is: on the assumption that the project goes ahead, what possible future effects on the environment will constitute “effects of the project” which (if significant) must therefore be assessed? The EIA Directive answers that question by imposing the test of whether the effect is “likely”. Thus, article 5(1)(b) requires the information provided by the developer to include “a description of the *likely* significant effects of the project on the environment” (emphasis added) and Annex IV further specifies what this obligation involves.

73. The term “likely” can bear more than one meaning. It can mean “more probable than not”, or it may connote some other (lesser or greater) degree of probability. A guide provided by the Intergovernmental Panel on Climate Change, quoted with approval by the European Commission in its 2013 Guidance at p 40, equates the term “likely” with a probability of between 66% and 100%. Arguably, this is too strict a standard. But, as I will soon discuss, there is no need to express any view on this question to decide this case.

74. Whatever the precise meaning of the term, to determine that a potential effect is “likely” requires evidence on which to base such a determination. If evidence is lacking so that a possible future occurrence is a matter of speculation or conjecture, then a rational person would not feel able to judge that it is “likely”. Such agnosticism is not the same as judging the event to be unlikely. It reflects a belief that there is too little knowledge on which to base a judgment.

75. The need for sufficient evidence on which to base an assessment is not spelt out as a requirement in the EIA Directive. But it can be deduced from the description and purpose of the EIA procedure. As set out in article 1(2)(g), stage (iv) of that procedure - which follows (i) the preparation of the environmental statement by the developer, (ii) the carrying out of consultations, and (iii) the examination by the competent authority of the information received - is:

“[a] reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of [its] examination;”

76. The initial, information gathering stages of the process, including the preparation of the environmental statement, are thus directed towards the ability to reach a reasoned conclusion on the significant effects of the project on the environment. This is confirmed in article 5(1), which provides that the environmental statement shall “include the information that may reasonably be required for reaching a reasoned conclusion on the significant effects of the project on the environment, taking into account current knowledge and methods of assessment.” Similarly, article 5(3)(c) provides that, “where necessary, the competent authority shall seek from the developer supplementary information, in accordance with Annex IV, which is directly relevant to reaching [a] reasoned conclusion on the significant effects of the project on the environment.”

77. Implicit in these provisions, and in the aims of the EIA Directive, is the criterion that material should be included in the environmental statement and taken into account in the procedure only if it is information on which a reasoned conclusion could properly be based. Conjecture and speculation have no place in the EIA process. Thus, if there is

insufficient evidence available to found a reasoned conclusion that a possible environmental effect is “likely”, there is no requirement to identify, describe and try to assess this putative effect. This criterion must also govern, where a possible effect is regarded as “likely”, the nature and extent of the assessment of the effect.

78. There is here an area of evaluative judgment involved in determining the scope of an EIA. Judging whether a possible effect of a project is likely and capable of assessment may, depending on the circumstances, be a matter on which different decision-makers, each acting rationally, may take different views.

Causation in this case

79. In this case there is no uncertainty about the relevant facts. It is known with certainty that the extraction of oil at the proposed well site in Surrey - which is the activity giving rise to the requirement to carry out an EIA - would initiate a causal chain that would lead to the combustion of the oil and release of greenhouse gases into the atmosphere. It is not necessary to consider what is meant by “likely” because it is an agreed fact that, if the project goes ahead, this chain of events and the resulting effects on climate are not merely likely but inevitable.

80. Expressed in terms of necessary and sufficient conditions, this is not simply a case in which the “but for” test is satisfied in that, but for the extraction of the oil, the oil would stay in the ground and so would not be burnt as fuel. On the agreed facts, the extraction of the oil is not just a necessary condition of burning it as fuel; it is also sufficient to bring about that result because it is agreed that extracting the oil from the ground guarantees that it will be refined and burnt as fuel. As discussed above, a situation where X is both necessary and sufficient to bring about Y is the strongest possible form of causal connection - much stronger than is required as a test of causation for most legal purposes.

81. It is also common ground that general estimates of combustion emissions can be made using methodology such as that described in guidance issued by the Institute of Environmental Management and Assessment. Estimating the combustion emissions which will occur if the project proceeds is not a difficult task. It could easily have been performed by the developer and has in fact been performed by Dr Jessica Salder, the council officer who reviewed the environmental statement, when she made a witness statement in these proceedings. All that is required is to identify from published sources a suitable “conversion factor” - which is the estimated amount of carbon dioxide emitted upon combustion of each tonne of oil produced. The total estimated quantity of oil to be produced is then multiplied by this conversion factor to calculate the total combustion emissions. In her evidence Dr Salder used a conversion factor of 3.22 tonnes of carbon dioxide for each tonne of oil produced. Multiplying the total estimated

output from the proposed project of 3.3 million tonnes of oil (see para 31 above) by this factor gives an estimated total of 10.6 million tonnes of CO₂ emissions over the lifetime of the project.

82. It is instructive to compare the amount of these emissions with the “direct” GHG emissions at the well site over the lifetime of the project which were included in the environmental statement. The estimated amount of the “direct” GHG emissions was 140,958 tonnes of CO₂. As well as providing this figure, the developer calculated the proportion which this figure would represent of the total UK carbon budget. Based on this calculation, the environmental statement described the effects of the proposed development on climate as “negligible”. Had the combustion emissions been included in the assessment, the figure for GHG emissions attributable to the project would have been nearly two orders of magnitude greater and could not have been dismissed as “negligible” in that way.

Direct and indirect effects

83. Article 3(1) of the EIA Directive requires the EIA to assess both the “direct and indirect” effects of a project on the specified environmental factors, one of which is climate. The express requirement to assess indirect as well as direct effects is clearly intended to emphasise the wide causal reach of the required assessment. This is further emphasised by the stipulation in Annex IV, para 5, that the description of the likely significant effects on the factors specified in article 3(1) should cover both the direct effects and “any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project.” It would be hard to devise broader wording than this.

84. From one point of view the distinction between “direct” and “indirect” effects does not matter, as both types of effect must be assessed in the EIA process. There is still, I think, some value in considering what these terms mean. No case law has been cited which has sought to define “direct” and “indirect” effects. A natural way to understand the distinction - and how it is commonly used in social sciences - is to define a direct effect of one event on another event as an effect which is not mediated by one or more variables. An indirect effect, by contrast, is one which depends on one or more variable intermediate factors that may alter the total effect observed: see eg J Pearl, “Direct and indirect effects” in Proceedings of the American Statistical Association, Joint Statistical Meetings (2005), pp 1572–1581.

85. On this definition combustion emissions are direct effects of the extraction of oil because they are almost entirely independent of any intermediate variables. To know that combustion emissions will occur and quantify them, there is no need to know anything about where the oil will go after it is extracted or what the oil will be used for

or when or where it will be burnt. It is sufficient to know - as is known with virtual certainty - that the oil will be refined and ultimately used as fuel. There are no variables in the intervening events which will significantly alter the fact or amount of the combustion emissions or their impact on climate. So on this definition the combustion emissions are a direct effect of the activity of extracting the oil.

86. An alternative approach is to draw the distinction by reference to the immediate source of the impact. This approach gets some support from guidance issued by the European Commission. In May 1999 the European Commission published *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions*. These Guidelines were said to be intended for use by EIA practitioners and developers and to be designed to apply to a wide range of projects and to assist in the EIA process throughout Member States.

87. After observing that there are no agreed and accepted definitions, the Guidelines define “indirect impacts” as:

“Impacts on the environment, which are not a direct result of the project, often produced away from or as a result of a complex pathway. Sometimes referred to as second or third level impacts, or secondary impacts.”

This definition offers little assistance beyond spelling out that, as might be thought obvious, indirect effects can be and often are produced away from the site of the project.

88. Somewhat more useful are the definitions given in the 2013 Guidance referred to at para 24 above. This defines “direct effects” as:

“Environmental effects directly caused by the preparation, construction or operation of a project in a particular location.”
(p 6)

“Indirect effects/impacts” are defined as:

“Effects/impacts that occur away from the immediate location or timing of the proposed action, eg quarrying of aggregates elsewhere in the country as a result of a new road proposal, or as a consequence of the operation of the project (see also secondary effects).” (p 7)

The definition of “secondary effects”, to which cross-reference is made, is:

“Effects that occur as a consequence of a primary effect or as a result of a complex pathway.” (p 8)

89. When applied to GHG emissions, these definitions distinguish between those which are “direct” and “indirect” effects in much the same way as the GHG Protocol and IFRS S2. As noted earlier, those standards define direct GHG emissions (labelled “scope 1”) as GHG emissions that occur from sources that are owned or controlled by an entity. Indirect GHG emissions (ie scope 2 and 3) are defined as GHG emissions that are a consequence of the activities of an entity but occur at sources owned or controlled by another entity.

90. On these definitions the combustion emissions are indirect effects of the project, as they will occur, probably far away from the project site, at sources owned or controlled by entities other than the developer / site operator. They are like impacts from the quarrying of aggregates in the illustration given by the Commission in defining “indirect effects.” If the quarrying of aggregates used in building a new road would be likely to generate significant GHG emissions, the Commission contemplates, correctly in my view, that these would be indirect effects of the project which, if significant, must therefore be assessed. I can see no reason why combustion emissions that will occur elsewhere as a consequence of the operation of a project to extract oil should be regarded differently.

91. The 2013 Guidance, at p 29, also provides a table of “examples of main climate change and biodiversity concerns to consider as part of EIA.” Under the heading “climate change mitigation” the table lists: “direct GHG emissions”; “indirect GHG emissions due to increased demand for energy”; and “indirect GHG emissions caused by any supporting activities or infrastructure that is directly linked to the implementation of the proposed project (eg transport ...).” In the terminology of the GHG Protocol and IFRS S2, the first of these categories corresponds broadly to scope 1 GHG emissions, the second to scope 2 GHG emissions, and the third to certain types of scope 3 GHG emissions.

92. Doubtless the categories given as examples were chosen because they are likely to be relevant to many different types of project - unlike combustion emissions which arise as a consequence of projects for the extraction of fossil fuels. But there is no suggestion that the categories stated as examples are considered to be exhaustive of the circumstances in which GHG emissions can occur as indirect effects of a project. To the contrary, the 2013 Guidance states expressly that they are examples only, that the list “is not comprehensive”, that “the issues and impacts relevant to a particular EIA should be defined by the specific context of each project”, that “flexibility is therefore needed”,

and that the table provided “should be used only as a starting point for discussion.” The examples given therefore cannot be read as somehow cutting down the definition of “indirect effects” given earlier in the 2013 Guidance. Applying that definition, the combustion emissions are “indirect effects” of the project in issue here.

Transboundary effects

93. It is worth emphasising that the EIA Directive does not impose any geographical limit on the scope of the environmental effects of a project which must be identified, described and assessed when an EIA is required. In principle, all likely significant effects of the project must be assessed, irrespective of where (or when) those effects will be generated or felt. There is no justification for limiting the scope of the assessment to effects which are expected to occur at or near the site of the project. The fact that an environmental impact will occur or have its immediate source at a location away from the project site is not a reason to exclude it from assessment. There is no principle that, if environmental harm is exported, it may be ignored.

94. That is no less true if the effect will be produced or felt outside the territorial jurisdiction of the state (here, the UK) whose national law requires the EIA to be carried out. If there were otherwise any doubt about this, it is removed by the express inclusion in Annex IV, para 5, of “transboundary” effects in the description of the likely significant effects on the factors specified in article 3(1) which should be covered (see para 83 above).

95. The developer in the present case advanced an argument that the express requirement to assess “transboundary” effects actually tells in favour of a narrow interpretation of the scope of the effects on climate which are to be assessed. This paradoxical claim makes no more sense on analysis than it does at first sight. The argument is based on article 7 of the EIA Directive. Article 7 applies where a Member State is aware that a project intended to be carried out in one Member State is likely to have significant effects on the environment in another Member State. In such a case the Member State in whose territory the project is intended to be carried out must give the other Member State an opportunity to participate in the environmental decision-making procedures. Article 7 also requires the Member States concerned to enter into consultations regarding the potential transboundary effects of the project. The argument made is that it cannot sensibly have been intended that the article 7 procedure should have to be invoked in any case where a project is likely to give rise to “downstream” GHG emissions in another Member State.

96. Plainly it would be impossibly burdensome if, for example, in relation to the present project it were necessary to give every Member State of the European Union an opportunity to participate in the environmental decision-making procedures on the

footing that oil produced from the well site might find its way into that country and generate GHG emissions when used as fuel. But that is a false fear. There is no risk of such an obligation arising, for two reasons. First, there is no way of knowing where the oil produced from the well site will ultimately be used as fuel. There is therefore no foreign state of which it can be said (on anything more than speculation) that the oil is likely to be consumed there. Second, and more fundamentally, it is wrong in any event to treat the impact on climate of GHG emissions as local to the places where the combustion occurs.

97. Climate change is a global problem precisely because there is no correlation between where GHGs are released and where climate change is felt. Wherever GHG emissions occur, they contribute to global warming. This is also why the relevance of GHG emissions caused by a project does not depend on where the combustion takes place. If an activity is carried on which will inevitably result in significant GHG emissions, people who carry on the activity cannot be heard to say: “These emissions are not effects of our activity because they are occurring far away among people of whom we know nothing.”

98. On a proper interpretation, the obligations set out in article 7 of the EIA Directive are not triggered by awareness that, as a consequence of a project intended to be carried out in one Member State, GHG emissions are likely to occur in another Member State. To avoid absurdity, the reference in article 7(1) to “effects on the environment in another Member State” must be read as meaning effects on the environment which are specific to that other Member State rather than purely global effects that affect the whole world. Thus effects on climate of GHG emissions occurring in one state as a consequence of a project undertaken in another state do not fall within article 7.

99. This conclusion is reinforced by the 1991 UN Convention on Environmental Impact Assessment in a Transboundary Context (known as the “Espoo Convention”), to which - as recital (15) of the EIA Directive confirms - article 7 is intended to give effect. Article 1(8) of the Espoo Convention defines a “transboundary impact” to mean “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” (emphasis added). The EIA Directive does not itself define a “transboundary impact” or “transboundary effect”, but it is reasonable to interpret these terms where they are used in the EIA Directive as having a similar meaning to their meaning in the Espoo Convention.

100. The fact that the combustion emissions from the oil produced are likely to occur outside the UK therefore does not give rise to any requirement to invoke the article 7 procedure. As the effects of GHG emissions on the environment are exclusively of a global nature, they are not “transboundary effects” which engage obligations of

consultation between the nation in which the oil is produced and the nation(s) in which its combustion occurs.

10. The council's approach

101. Coming now to the EIA carried out in this case, the legal error made as regards the scope of the assessment is apparent on the face of the relevant reports. The environmental statement explained that the developer had confined its assessment of GHG emissions to the “direct releases of greenhouse gases from within the well site boundary.” Admittedly, therefore, the developer chose to provide information only about the direct effects of the project on climate and to exclude indirect effects, contrary to the express requirement in the EIA Directive and 2017 Regulations that indirect effects must be included. The council accepted and adopted this approach. As a result, the officer's report on which the council's decision to grant development consent was based advised that the proposed development would not give rise to significant effects on the climate by way of GHG emissions “directly attributable” to the operation of the scheme. GHG emissions indirectly caused by the project were not considered. Again, therefore, the scope of the assessment self-evidently did not comply with the legal requirement to assess both direct and indirect effects of the proposed development.

Effects “outwith the control” of the site operators

102. The flaws in the reasons given by the developer and accepted by the council for limiting the scope of the assessment in this way are also in my view plain. The fact that the combustion emissions would emanate from activities beyond the well site boundary which were not themselves part of the project was not a valid reason to exclude them. An impact is not precluded from being an effect of a project by the fact that its immediate source is another activity that occurs away from the project site. As already discussed, it is in the very nature of “indirect” effects that they may occur as a result of a complex pathway involving intermediate activities away from the place where the project is located.

103. The associated reason given that GHG emissions beyond the well site boundary are “outwith the control of the site operators” (see para 36 above) was equally flawed. The combustion emissions are manifestly not outwith the control of the site operators. They are entirely within their control. If no oil is extracted, no combustion emissions will occur. Conversely, any extraction of oil by the site operators will in due course result in GHG emissions upon its inevitable combustion. It is true that the time and place at which the combustion takes place are not within the control of the site operators. But the effect of the combustion emissions on climate does not depend on when or where the combustion takes place. Those factors are irrelevant to the size and significance of the environmental impact.

104. One potential benefit of the EIA process is that it may sometimes result in the identification of ways in which the design of the project can be modified without undue detriment to its aims so as to avoid or reduce what would otherwise have been a significant adverse environmental effect of the project. The EIA Directive contains provisions specifically aimed at this. Thus, article 5(1)(c) states that the information provided by the developer in the environmental statement must include “a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment”; see also Annex IV, para 7. And where development consent is granted, the decision to grant it must incorporate “a description of any features of the project and/or measures envisaged to avoid, prevent or reduce and, if possible, offset significant adverse effects on the environment”: see article 8a(1)(b). Member States must ensure that any such features or measures are implemented by the developer: article 8a(4).

105. In the case of oil extraction, there are no measures within the control of the developer which, if the project proceeds, would avoid or reduce the combustion emissions and their impact on climate. But that is not a reason to dispense with an EIA. Identifying mitigating measures, where they are available, may be a valuable result of the EIA process. But it is not its sole - or even its main - purpose. If there are no measures which could be taken to mitigate adverse environmental effects of a project, then this is itself something the decision-maker and the public need to know. The EIA process would not fulfil its essential purpose of ensuring that decisions likely to affect the environment are made on the basis of full information if the fact that significant adverse effects are unavoidable were treated as a reason not to identify and assess them.

Other environmental regimes

106. The further reason given by the developer and accepted by the council for confining the assessment to direct GHG emissions from sources within the well site boundary was that the council should not concern itself with emissions that will occur “downstream” when the oil produced from the wells is processed and used because such processes are regulated by other, non-planning regimes and the council “can assume that these regimes will operate effectively to avoid or mitigate the scope for material environmental harm” (see para 36 above).

107. Para 122 of the developer’s environmental statement, which made this argument, quoted from the National Planning Policy Framework (July 2018), para 183, which stated:

“The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these

are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. ...”

Reference was also made in footnotes to para 122 to the National Planning Practice Guidance, Minerals, para 012, which was in similar terms, and to *R (Frack Free Balcombe Residents Association) v West Sussex County Council* [2014] EWHC 4108 (Admin). This case was cited for the proposition that a “local planning authority may consider that matters of regulatory control can be left to a statutory regulatory authority to consider.”

108. It was a clear legal error to regard this aspect of planning policy as a justification for limiting the scope of an EIA. An assumption made for planning purposes that non-planning regimes will operate effectively to avoid or mitigate significant environmental effects does not remove the obligation to identify and assess in the EIA the effects which the planning authority is assuming will be avoided or mitigated. This is clear from a line of authority referred to in the *Frack Free Balcombe Residents Association* case. In *R (Lebus) v South Cambridgeshire District Council* [2002] EWHC 2009 (Admin); [2003] Env LR 17, paras 41-46, Sullivan J held that it is an error of law to reason that no environmental statement is needed because, although a project would otherwise have significant effects on the environment, mitigation measures will render them insignificant. What is required in such a case is an environmental statement setting out the likely significant effects and the measures which can be taken to mitigate them; see also *R (Champion) v North Norfolk District Council* [2015] UKSC 52; [2015] 1 WLR 3710, paras 49-51. The same principle must apply in determining the scope of the assessment required where an environmental statement is carried out.

109. As pointed out in those cases, the requirement in the EIA Directive to describe “measures envisaged to avoid, prevent or reduce and, if possible, offset significant adverse effects on the environment” (see para 104 above) implies that the potentially significant environmental impacts of a development should be described together with the measures expected to avoid or reduce them. The public is thereby able to understand the assumption made and to comment on it.

110. In any case it does not appear that there are any separate pollution control or other non-planning regimes which could be relied on to avoid or reduce the combustion emissions which would be indirect effects of the project proposed here. No such regimes have been identified in these proceedings. Indeed, it follows from the agreed fact that it is inevitable that oil produced from the well site will be refined and will eventually undergo combustion, which will produce GHG emissions, that the combustion emissions are unavoidable if the project proceeds and no pollution control regime could be relied on to prevent or reduce them.

111. The reasons accepted by the council for excluding the combustion emissions from consideration and assessing only direct GHG emissions from within the well site boundary are therefore demonstrably flawed. Unless there is some other reason not given in the environmental statement or the council's review of it which required the EIA to exclude the combustion emissions, it follows that the council's decision was unlawful.

11. The judge's approach

112. Although the Court of Appeal did not think that there was any such reason, the judge did. I will therefore consider next the judge's view that assessment of the combustion emissions was, as a matter of law, incapable of falling within the scope of the EIA required by the legislation. As discussed earlier, to justify that conclusion, it would be necessary through interpretation of the EIA Directive and the 2017 Regulations to identify a criterion governing the scope of the EIA which, when applied, dictates - without any room for reasonable differences of opinion - that the combustion emissions are not likely effects of the project on climate.

113. What might that criterion be? The judge's reason for his conclusion was expressed in this passage (at para 126) of his judgment:

“In my judgment the scope of that obligation [ie the obligation to assess the environmental effects of the project] does not include the environmental effects of consumers using (in locations which are unknown and unrelated to the development site) an end product which will be made in a separate facility from materials to be supplied from the development being assessed. I therefore conclude that, in the circumstances of this case, the assessment of GHG emissions from the future combustion of refined oil products said to emanate from the development site was, as a matter of law, incapable of falling within the scope of the EIA required by the 2017 Regulations ...”

114. This reasoning needs to be unpicked. One point made, although only parenthetically, is that the combustion emissions will occur in “locations which are unknown and unrelated to the development site.” In so far as the judge relied on this fact, I have already pointed out its irrelevance. The effect of the combustion emissions on climate does not depend on where they occur, and it is thus unnecessary to know where the emissions will occur to assess their environmental impact. There is therefore no justification for restricting the scope of the assessment to GHG emissions occurring at known locations at or related to the development site. To the contrary, such a

restriction is inconsistent with the language and purpose of the EIA Directive and the 2017 Regulations.

115. I do not, however, perceive the judge's reference to the locations where the combustion emissions will occur as essential to his reasoning. I understand his central point to be that the source of the emissions will not be use of the oil in the state in which it is extracted from the ground but the use of "an end product which will be made in a separate facility from materials to be supplied from the development." Hence the fact that the oil will undergo an intermediate process of being refined in a separate facility before it is burnt as fuel is seen as pivotal. This is what, in the judge's view, entails that the combustion emissions are incapable as a matter of law of being effects of the project within the meaning of the legislation.

116. This view also has the support of the Court of Session (Inner House) in *Greenpeace Ltd v Advocate General* [2021] CSIH 53; 2021 SLT 1303, para 65, which in obiter dicta agreed with Holgate J's reasoning and conclusion that the effects of the project do not include effects of "the consumption of any retailed product ultimately emerging as a result of a refinement of the raw material."

The relevance of refinement

117. This is also the position which the developer seeks to defend on this appeal. Counsel for the developer submitted that the combustion emissions cannot be regarded as effects of the project because the crude oil produced from the well site could not itself be used as fuel. What results in the combustion of the oil, so it was argued, is the separate activity of manufacturing fuel products at a refinery. Crude oil refineries are projects which themselves require development consent and an EIA (at least if they are situated in the UK or the European Union). Mr David Elvin KC for the developer expressly accepted that, in carrying out an EIA for a refinery, it would be necessary to assess the combustion emissions from the refined oil because they would be effects of the activity of refining the crude oil. But he submitted that these emissions cannot, in law, be regarded as effects of the activity of extracting the crude oil because of the need for this intermediate refining process to take place before the oil can be used.

118. I cannot accept that the existence of this intermediate process has the legal significance contended for by the developer and attributed to it by the judge. The process of refining crude oil does not alter the basic nature and intended use of the commodity. Given that the process of refining the oil is one which it is always expected and intended that the oil will undergo - and which it is agreed that the oil produced here will inevitably undergo - it is unreasonable to regard it as breaking the causal connection between the extraction of the oil and its use.

119. The judge was clearly concerned that, if it were to be accepted that combustion emissions are environmental effects of the extraction of the oil, then this would have “ramifications far beyond the legal merits of the present challenge as they relate to the production of crude oil” (para 4). The judge drew a comparison with the production of other minerals and raw materials for use in industrial processes. He observed that, for example, the production of metals, followed by their use to manufacture parts for motor vehicles and the assembly of such vehicles, will result in GHG emissions from the cars, vans and lorries when they are eventually purchased and driven (para 4). The judge also gave an example of a factory that manufactures components for use in the construction of aircraft. He observed that such manufacture will result in GHG emissions, not just from the industrial processes involved but ultimately from the fuel burnt when the aircraft are used for aviation (para 5). Holgate J was clearly worried that, if all the GHG emissions generated from these activities had to be assessed, the EIA process would be unduly onerous and unworkable.

120. In my view, this concern was misplaced. Recognising that combustion emissions are effects of producing crude oil does not open floodgates in the way the judge feared. There are sound reasons for distinguishing examples of the kind he gave, without resorting to the artificial notion that refining crude oil transforms it into something fundamentally different and so breaks the chain of causation between the extraction of the oil and its use.

121. Oil is a very different commodity from, say, iron or steel, which have many possible uses and can be incorporated into many different types of end product used for all sorts of different purposes. In the case of a facility to manufacture steel, it could reasonably be said that environmental effects of the use of products which the steel will be used to make are not effects of manufacturing the steel. That is because the manufacture of the steel is far from being sufficient to bring about those effects. Such effects will depend on innumerable decisions made “downstream” about how the steel is used and how products made from the steel are used. This indeterminacy regarding future use would also make it impossible to identify any such effects as “likely” or to make any meaningful assessment of them at the time of the decision whether to grant development consent for the construction and operation of the steel factory.

122. Similar considerations apply to Holgate J’s examples of manufacturing components for use in the construction of motor vehicles or aircraft. Where a component is manufactured which forms a small part of a much larger object, such as a motor vehicle or aircraft, the view might reasonably be taken that the contribution of the component is not material enough to justify attributing the impact on the environment of the end product to the activity of manufacturing the component part. In any event, the number of motor vehicles or aircraft in which such parts will be incorporated and the use which will subsequently be made of them may be so conjectural that no realistic estimate could be made of GHG emissions arising from such use on which a reasoned conclusion could be based. I have discussed above that the EIA process does not require

that attempts be made to measure or assess putative effects which are incapable of such assessment.

123. But that is not the position here. The oil produced from the well site will not be used in the creation of a different type of object, in the way that a component part is incorporated - along with many other different and equally necessary components - in manufacturing a motor vehicle or aircraft. Refining the oil is simply a process that it inevitably undergoes on the pathway from extraction to combustion. Nor is there any element of conjecture or speculation about what will ultimately happen to the oil. It is agreed that it will inevitably be burnt as fuel. And a reasonable estimate can readily be made of the quantity of GHGs which will be released when that happens.

124. It is also instructive to compare what the position would be if the fossil fuel extracted from the ground were, for example, coal. Coal need not undergo any intermediate process before it is burnt as fuel. So, on the developer's approach, the combustion emissions from the coal would be effects that it would be necessary to assess in an EIA for a project to mine coal. I do not think it rational to distinguish between combustion emissions from different fossil fuels on this basis.

125. Nor can it affect the analysis that crude oil refineries are themselves among the projects referred to in article 4(1) and Annex I of the EIA Directive which automatically require an EIA before development consent may be granted. There is no reason to suppose that oil produced by the well site in Surrey would be sent to a refinery for which an EIA would be required before the oil could be refined (or even that the refinery would necessarily have required an EIA pursuant to the EIA Directive when it was built). More importantly, there is no rule that the same effect on the environment cannot result from more than one activity or that, if particular effects have been or will be assessed in the context of one project, this dispenses with the need to assess them as part of an EIA required for another project. It is in any event an objective of the EIA Directive, recorded in recital (2), that effects on the environment should be taken into account at the earliest possible stage in decision-making. That entails that, whatever other assessments might be required in which some of those GHG emissions are included, an assessment of the GHG emissions from the combustion of oil should be made before permission is given to extract the oil from the ground and the oil begins the journey which will inevitably end with these emissions.

126. For these reasons, the fact that the crude oil produced from the well site would need to be refined before it is used as fuel is not a valid ground for excluding the combustion emissions from the scope of the EIA. Still less does the need to process the oil at a refinery justify the conclusion that the combustion emissions cannot as a matter of law count as effects of the project.

The project “itself”

127. Can anything else provide a criterion which, when applied, leads to the conclusion that the combustion emissions are not, as a matter of law, effects of the project on climate and are therefore incapable of falling within the scope of the EIA? At para 101 of his judgment Holgate J said that “the true legal test is whether an effect on the environment is an effect of the development for which planning permission is sought.” It is impossible to disagree with this statement as it merely repeats what the legislation says.

128. Holgate J also said, at para 110, that “indirect effects” of the proposed development cover “consequences which are less immediate, but they must, nevertheless, be effects which *the development itself* has on the environment” (emphasis in original). Outside the realms of Kantian metaphysics, there is no such thing as “the development itself” which enjoys some sort of separate noumenal existence. There are only the human activities which constitute the physical development (or “project”, to use the terminology of the EIA Directive).

129. If referring to “the project itself” is intended to emphasise that it is necessary to distinguish between direct and indirect effects of the project, or between local and geographically distant effects, then that is untenable for the reasons I have already explained. The EIA must include all effects of the project, whether direct or indirect, immediate or remote. Further, the fact that something is an effect of the project does not mean that it cannot also be an effect of something else. It does not follow that because the combustion emissions are effects of some other activity, such as the refinement of the oil or its subsequent use as fuel by consumers, then they cannot also be effects of the project of extracting the oil. As Lord Hoffmann pointed out several times in the *Environment Agency* case, the fact that an activity has caused an environmental impact (or other event) is not inconsistent with another activity having caused it as well.

130. In short, the assertion that “effects of the project” must be effects which “the project” or “*the project itself*” has on the environment does not take matters any further.

12. The Court of Appeal’s approach

131. As already noted, the Court of Appeal did not think it possible to say that the combustion emissions are legally incapable of being an environmental effect requiring assessment under the legislation. All the same, the Senior President of Tribunals attached significance to the intermediate steps which would have to occur before combustion could take place. He did not adopt the judge’s view that the need to refine the oil before it could be used as fuel was a critical consideration. But he emphasised the fact that the oil extracted at the project site would pass through “several other

distinct processes and activities, including, initially, its refinement, followed by the onward transportation and distribution of the refined products, and their eventual sale for use as fuel, which would only then, in various places at various times, produce emissions of greenhouse gases”: see para 65.

132. In the view of the Senior President, whether the combustion emissions were “indirect effects” of the project depended on an evaluative judgment as to whether, given these intermediate events, there was a “sufficient causal connection” between the extraction of the oil and its eventual combustion. This was a question to which he thought that different decision-makers, each acting reasonably and lawfully, could give opposite answers. Thus, the Senior President concluded, at para 66, that:

“the environmental effects of [the combustion] emissions could reasonably be seen as far removed from the proposed development itself, and not causally linked to it, because of the series of intervening stages between the extraction of the crude oil and the ultimate generation of those emissions ...”

133. The first difficulty with this approach is that it is unclear how the decision-making authority is supposed to judge whether the existence or nature of the intervening stages between the extraction of the oil and the ultimate generation of emissions is such as to render the connection between them insufficiently close. Is the number of intervening stages supposed in itself to be important? Does the nature of these stages matter and, if so, how? Is the geographical distance between the project site and the places where the GHG emissions will take place supposed to be a relevant consideration and, if so, why? What else, if anything, would be relevant in making a judgment that there was or was not a “sufficient causal connection”? Without any criteria to answer these questions, developers and decision-making authorities are left completely adrift. If the idea is that it is for each decision-maker to decide for itself what factors to treat as relevant, this is not a reasonable interpretation of the EIA Directive. As discussed earlier in this judgment, it would be a recipe for unpredictable, inconsistent and arbitrary decision-making.

134. There is another fundamental problem with this approach. It is not just that it is intolerably vague. Considering the questions that I have posed above shows that it rests on a false premise. The fact that there is a series of intervening stages between the extraction of the oil and the ultimate generation of emissions does not itself provide any rational basis for denying that the two are causally linked. If there is a clear and inexorable causal path from event X to event Y, then Y is an effect of X. The number of intermediate steps along the way, the nature of those steps and the fact that Y occurs far away from X does not alter or affect that conclusion.

135. The Senior President gave two reasons to justify the proposition that a decision-maker could reasonably decide that the GHG emissions generated when the oil produced is burnt are not even indirect effects of the proposed development, because of the intervening stages through which the oil must pass (see para 65 of the Court of Appeal judgment). Both reasons are, in my opinion, mistaken. The first was that “decisions yet to be made ‘downstream’ would determine how much of the oil would end up being combusted.” If true, that might make it impossible to assess what the likely quantity of combustion emissions would be. But it is not true. It was an error to say that how much of the oil would end up being combusted would depend on decisions yet to be made ‘downstream’. It is common ground that *all* of the oil would be combusted. This follows from the agreed fact that it is inevitable that the oil produced would be refined and would eventually undergo combustion. There is no difficulty, let alone impossibility, in these circumstances in assessing the likely quantity of the combustion emissions.

136. The Senior President added a suggestion that the emissions generated by combustion of the oil would depend on “whether the economic demand for it would rise or fall.” That is also incorrect. Rise or fall in demand would doubtless affect the price for which the oil is sold and purchased. But it has not been suggested - and it would be inconsistent with the agreed facts to suggest - that any such rise or fall in demand would result in any of the oil remaining unused.

137. The second reason given by the Senior President was that the claimant had not argued that any of the environmental impacts resulting from the intermediate process of refinement ought to have been included in the EIA for the project. He said, at para 65:

“That is not part of the argument advanced ... What is submitted, in effect, is that the county council could only reasonably conclude that environmental impacts several steps further away than refinement ought to have been assessed. That proposition is, in my view, untenable.”

This reasoning is also invalid because it assumes that, just because something was not argued, it must be wrong, and that its invalidity can then be relied on to draw further inferences without the need to identify whether or why the argument not made could not have succeeded.

138. Given the agreed fact that all the oil produced would be refined, I see no reason why environmental impacts resulting from the process of refining the oil should not in principle fall within the scope of the EIA for the project of extracting the oil. There are, however, potential reasons why the view might reasonably be taken that it was not necessary to include an assessment of such impacts in the EIA. One would be that there

was insufficient information available on which to make a reasonable assessment of the relevant impacts. Another potential reason would be that, so far as it was possible to judge, such impacts were not themselves likely to be significant. I express no view about whether such reasons would in fact have been tenable as the question has never been raised or explored. What matters is that it cannot properly be assumed that, because the claimant has not complained about the failure to assess effects of refining the oil, the council could reasonably exclude the effect on climate of ultimate use of the oil as fuel from the EIA.

139. In my view, there was no basis on which the council could reasonably decide that it was unnecessary to assess the combustion emissions. These further suggested possible reasons for that decision, like the reasons actually relied on by the council, are flawed.

13. Relationship between EIA and national policy

140. There is another line of argument that I must consider as it appears to have weighed with the judge and the defendants have sought to make something of it. This is, broadly stated, that local planning authorities are unsuited or incompetent to incorporate into decisions whether to grant planning permission for a mineral extraction project an assessment of the potential contribution of the project to climate change. To understand the basis for this argument it is necessary to look, in overview, at UK national policy as regards climate change and the extraction of oil and gas.

The Paris Agreement and the production gap

141. In adopting the Paris Agreement on 12 December 2015, most of the nations of the world have acknowledged that climate change represents “an urgent and potentially irreversible threat to human societies and the planet” (Preamble to the decision to adopt the agreement) and have agreed on the goal of “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”: article 2(1)(a). It is left to each state party to decide what measures it will take towards achieving this goal by preparing, communicating and maintaining successive “nationally determined contributions” that it intends to achieve: see article 4(2).

142. To date, most state parties’ planned contributions have focussed on setting targets for reducing GHG emissions from the consumption of fossil fuels within their own territory and taking measures aimed at reducing such consumption - for example, by promoting the development and use of alternative sources of energy. Comparatively little has been promised or done to reduce fossil fuel production. UNEP has published a series of reports highlighting and quantifying the “production gap” - that is, the difference between countries’ planned fossil fuel production and global production

levels consistent with limiting global warming to 1.5°C or 2°C. In analysing governments' policies and plans, these reports use an accounting method which allocates carbon dioxide emissions from fossil fuel combustion to the location of extraction. UNEP has consistently found that, viewed overall, the world's governments plan to produce more than twice the amount of fossil fuels in 2030 than would be consistent with limiting global warming to 1.5°C: see eg UNEP Production Gap Report 2023, p 4. The reports also examine national policies, plans and projections in key countries (including the UK). The general picture is that many governments continue to support, finance, and expand fossil fuel production, even though such policies are irreconcilable with global climate commitments: see eg UNEP Production Gap Report 2023, p 11.

UK legislation

143. The principal UK legislation addressing climate change is the Climate Change Act 2008. This sets a target for the year 2050 for a reduction of GHG emissions from sources in the UK (section 1). The Act also provides for a national system of carbon budgeting. Section 4(1) places a duty on the Secretary of State to set a carbon budget for each succeeding period of five years and to ensure that the net amount of UK emissions during a budgetary period does not exceed this budget. Carbon budgets must be set with a view to meeting the target for 2050 (section 8(2)). Section 13 requires the Secretary of State to prepare proposals and policies for meeting the carbon budgets set under the Act. Each time a new carbon budget is set, the Secretary of State must lay before Parliament a report setting out proposals and policies for meeting the carbon budgets for the current and future budgetary periods (section 14). There is also a duty to report to Parliament each year with a statement giving details of the amount of UK emissions for the year (section 16). Other provisions of the Act include the formation of a Committee on Climate Change which has duties to give advice to the Secretary of State and to report to Parliament on progress towards meeting the carbon budgets (sections 32 to 38).

144. In calculating “UK emissions” for the purpose of the Climate Change Act 2008 and measures taken under it, GHG emissions from fossil fuels extracted in the UK are not included unless the emissions occur in the UK.

145. Despite its impact on climate UK national policy remains geared towards encouraging domestic production of oil and gas. The Petroleum Act 1998 establishes a system of licences to explore for and extract petroleum in the UK. The “principal objective” of the regime, as stated in section 9A, is that of “maximising the economic recovery of UK petroleum.” Licences are granted by the Oil and Gas Authority (now named the North Sea Transition Authority), which conducts licensing rounds. A petroleum exploration and development licence grants exclusive rights within a defined area for a defined period in relation to hydrocarbon exploration, development and production. Such a licence confers exclusivity but does not give permission to carry out

operations. For this, other consents are needed, including planning permission from the relevant mineral planning authority. As noted earlier, where a project falls within the scope of the EIA Directive and 2017 Regulations, planning permission cannot be granted unless an EIA has been carried out (see para 29 above).

National planning policy

146. The National Planning Policy Framework (in the version published in February 2019) at para 205, stated that, “when determining planning applications, great weight should be given to the benefits of mineral extraction, including to the economy.” (There was an exception in relation to the extraction of coal.) This was originally supplemented by para 209(a), which stated that minerals planning authorities should “recognise the benefits of on-shore oil and gas development, including unconventional hydrocarbons, for the security of energy supplies and supporting the transition to a low-carbon economy; and put in place policies to facilitate their exploration and extraction.” However, para 209(a) was removed after the High Court held in *R (Stephenson) v Secretary of State for Housing, Communities and Local Government* [2019] EWHC 519 (Admin); [2019] PTSR 2209 that the decision to include it was unlawful because it was made without proper public consultation.

Arguments founded on national policy

147. Against this background, an argument is made that it would be inappropriate for a local planning authority, in deciding whether to grant planning permission for the extraction of oil at a particular site, to take into account the effects on climate of the GHG emissions that will result from the combustion of the oil. It is said that whether or to what extent measures should be taken aimed at reducing GHG emissions from oil extracted in the UK is a matter which can only sensibly and properly be addressed at a national level. It would not be appropriate for a local planning authority to take decisions on the basis of its own views on these issues.

148. It is further argued that the object of the EIA process is to obtain information that has a bearing on the decision whether to grant development consent (or attach conditions to such consent) for a project rather than simply to generate information for its own sake. It is said that this object would not be served by obtaining information about combustion emissions in relation to a project of the present kind, as there is nothing that the local planning authority could in practice do with this information. The burden of gathering and assessing such information would be disproportionate when it could not inform the decisions to be taken in any practical way.

149. This in turn is said to indicate that an interpretation of the EIA Directive under which GHG emissions from the combustion of extracted oil are capable of being

regarded as “indirect effects of a project” cannot be correct. It cannot have been the intention that information about such GHG emissions should be taken into account in the EIA process, since such information could have no proper bearing on actions to be taken by local planning authorities.

150. I consider these arguments to be misguided. To begin with, I do not accept the premise that it would be wrong for a local planning authority, in deciding whether to grant planning permission, to take into account the fact that the proposed use of the land is one that will contribute to global warming through fossil fuel extraction. Of course, the authority must have regard to national policy; and in so far as UK national policy requires great weight to be given to the benefits of petroleum extraction, in particular for the economy, that must be taken into account. But it does not follow that the planning authority has to ignore adverse effects on climate of a proposed project or adopt an interpretation of what constitute such adverse effects which is contrary to reality. Just as *beneficial* indirect effects of a project on climate - for example, the “green” energy that would be generated by a project to develop a wind farm or solar farm - are clearly a relevant matter for the planning authority to consider, so corresponding *adverse* effects are also a material planning consideration.

151. Quite apart from this, the arguments based on UK national policy have two flaws. First, it is wrong to interpret the meaning and scope of the EIA Directive by reference to UK policy and legislation (or that of any other country) for controlling GHG emissions and regulating petroleum production. Such matters are irrelevant to the proper interpretation of the EIA Directive. It is not simply that policies which Member States (or non-Member States) choose to adopt are generally irrelevant in construing EU legislation, though that is true. It is also necessary to recall that the aim of the EIA is to establish general principles for assessing environmental effects. UK national policy is clearly relevant to the substantive decision whether to grant development consent. But it is irrelevant to the scope of EIA. For reasons discussed earlier, the fact (if and in so far as it is a fact) that a decision to grant development consent for a particular project is dictated by national policy does not dispense with the obligation to conduct an EIA; nor does it justify limiting the scope of the EIA.

152. The second, related flaw is also fundamental. The argument made is a version of the claim that, if information about environmental impacts would make no difference to the decision whether to grant development consent (or on what conditions), it is not legally necessary to obtain and assess such information in the EIA process. Such a contention was resoundingly rejected by the House of Lords in *Berkeley*. It misunderstands the procedural nature of the EIA. The fact (if it be the fact) that information will have no influence on whether the project is permitted to proceed does not make it pointless to obtain and assess the information. It remains essential to ensure that a project which is likely to have significant adverse effects on the environment is authorised with full knowledge of these consequences.

153. Looking at the matter more broadly, it needs to be recognised that the process of EIA takes place in a political context and that the information generated by an EIA will be considered within a political decision-making arena. It is therefore inevitable that economic, social and other policy factors will outweigh environmental factors in many instances. But this does not avoid or reduce the need for comprehensive and high-quality information about the likely significant environmental effects of a project. If anything, it enhances the importance of such information. Nowhere is this more so than where issues arise relating to climate change.

154. It is foreseeable in today's world that, when development consent is sought for a project to produce oil, members of the public concerned will express comments and opinions about the impact of the project on climate change and the potential contribution to global warming of the oil produced. Indeed, as Lewison LJ observed (at para 148 of the judgment of the Court of Appeal) the officers' report recorded that such objections were made in this case. (Objections raised by two local parish councils were specifically mentioned in the report along with other public representations.) Lewison LJ thought that the fact that objections based on climate change were noted and considered by the council was a reason tending to show that the EIA was adequate because "it cannot be said that [the council] completely ignored the potential global warming effect of the proposed development": para 149. In my view, this fact shows the opposite. It confirms the inadequacy of the EIA. It is not good enough that the potential global warming effect of the proposed development was not "completely ignored". The effect should have been properly assessed so that public debate could take place on an informed basis. That is a key democratic function of the EIA process. It was not fulfilled here.

14. Case law

155. Although many decisions of domestic and foreign courts were cited in argument on this appeal, most were of limited assistance. There is no previous decision of a court in this country or of the CJEU on the question we have to decide. Given the rapidly increasing prominence of issues relating to climate change and GHG emissions, more litigation raising such issues can be expected. But the question raised on this appeal must be answered by examining the wording and purpose of the EIA Directive, as transposed into UK law by the 2017 Regulations. The main relevance of decided cases lies not in providing analogies with the facts of this case but in helping to illuminate the purpose of the EIA Directive and the proper approach to its interpretation. Where decided cases assist with this, I have referred to them above.

156. That said, four further cases, for different reasons, deserve mention.

Abraham v Wallonia

157. In *Abraham v Wallonia* (Case C-2/07) [2008] Env LR 32 the CJEU held that, in deciding whether a project to modify an airport required an EIA, it was necessary to take into account the effects on the environment of a projected increase in the activity of the airport and air traffic which would result from the proposed construction works. This decision confirms that the effects of a project which must be covered by an EIA are not limited to effects of construction works but include effects of the operational phase of the project - that is, of the activity which takes place after such works have been executed. In *Abraham* this was held to be so even though the project required an EIA because it fell within a category described in what is now Annex I, para 7, of the EIA Directive as “construction” of airports.

158. The claimant has sought to derive more from *Abraham* than this by reference to para 43 of the judgment, which states:

“It would be simplistic and contrary to [the approach required by the Directive] to take account, when assessing the environmental impact of a project or of its modification, only of the direct effects of the works envisaged themselves, and not of the environmental impact liable to result from the use and exploitation of the end product of those works.”

This statement was repeated in *Ecologistas en Acción-CODA v Ayuntamiento de Madrid* (Case C-142/07) [2009] PTSR 458, para 39. The claimant submits that the reference to “the use and exploitation of the end product of those works” is applicable to the use as fuel of the oil that would be produced by the proposed well site.

159. However, this submission takes the statement out of context. It is clear from the context that the phrase “end product” in the passage quoted above was intended to refer to the facility or installation that results from construction works. In *Abraham* that was the reconfigured airport. The equivalent here is the functioning well site after modifications to the existing site, the drilling of new wells and the installation of facilities for exporting crude oil from the site. The “use and exploitation of the end product of those works” would consist in the production of oil from the expanded well site. The judgment in *Abraham* does not assist in determining the scope of the effects on the environment of, in that case, the increase in the activity of the airport or, in this case, the planned production of oil.

Squire

160. A second case relied on by the claimant is *R (Squire) v Shropshire Council* [2019] EWCA Civ 888; [2019] Env LR 36. This concerned a challenge to the grant of planning permission for a facility for the intensive rearing of chickens. A by-product of the planned activity would be the production of substantial quantities of poultry manure. This was to be spread as fertiliser on agricultural land in the local area, some of it owned by the poultry farmer / developer and some of it owned by others. The Court of Appeal held, at paras 62-69, that the EIA for the project was deficient and unlawful because it did not include a proper assessment of indirect environmental effects of the proposed development in the form of smell and dust that would emanate from the storage and spreading of the manure, including on third party land.

161. This case provides an illustration, if it be needed, that the “indirect effects of a project” on the environment can include emissions occurring “downstream” from the development from sources that are not owned or controlled by the site owner. In his judgment in Court of Appeal here, at para 65, the Senior President said that *Squire* can be distinguished on the ground that:

“In that case the manure was a product of the development itself in its operation as a poultry enterprise: a waste product with a commercial value. The connection between the development and the impacts in question was clear as a matter of fact, and not dependent on a series of intermediate processes.”

162. I do not consider this to be a valid distinction. In this case too the oil would be a product of the development itself in its operation as a mining enterprise: a product with a commercial value. The connection between the development and the impacts in question is also clear as a matter of fact: it is common ground that the extraction of the oil will inevitably result in clear (and quantifiable) impacts on the environment upon its combustion. The only potential difference is in the existence of intermediate processes. It is unclear whether this is even a factual difference, as there may well be intermediate steps between the production of manure and its use as fertiliser. But assuming this to be a point of factual difference, I have already explained why, in my view, reliance on this as a material distinction is misplaced.

Kilkenny Cheese

163. Attention was also devoted in argument to the decision of the Irish Supreme Court in *An Taisce – The National Trust for Ireland v An Bord Pleanála (Kilkenny Cheese Ltd, notice Party)* [2022] IESC 8; [2022] 2 IR 173 (“the Kilkenny Cheese

case”). The central issue in that case was whether or to what extent there was an obligation to include in the EIA for a proposed cheese factory the environmental effects of producing the milk needed to supply the factory. The Irish national planning authority, An Bord Pleanála (“the Board”), in granting permission for the project, calculated the gross CO₂ emissions likely to arise in producing the 450 million litres of milk (some 4.5% of the national milk supply) expected to be required by the factory each year. But the Board found that the milk would come from existing sources and thus was going to be produced in any event. It followed that there would be no significant net increase in GHG emissions as a result of the construction and operation of the factory: see para 108 of the court’s judgment.

164. Even so, the Supreme Court accepted that establishing a new factory which would take 4.5% of the national milk supply may have some wider economic effects by increasing the overall demand for milk. This increase in overall demand might in turn stimulate an increase in milk production, with implications for the size of the national herd and therefore GHG emissions: see paras 75-78. The key question was whether these implications for general milk production and GHG emissions were “indirect significant effects of a project” within the meaning of article 3(1) of the EIA Directive which the EIA for the project was therefore required to identify and assess: para 79. The court answered this question in the negative.

165. The court’s judgment, given by Gerard Hogan J, was handed down after the judgment of Holgate J but before the judgment of the Court of Appeal in this case. Two possible interpretations of article 3(1) were considered. The first was to say that article 3(1) “should be read in an open-ended fashion”: para 87. The second was to adopt the approach of Holgate J in this case and say that, to fall within article 3(1), indirect effects must be “effects which the development itself has on the environment”: para 102. Hogan J rejected the “open-ended” interpretation because he considered that it would lead to the imposition of obligations in carrying out EIAs which were impossibly onerous and unworkable: paras 100, 103-105. He endorsed Holgate J’s approach, subject to the caveat that “there may well ... be special and unusual cases where the causal connection between certain off-site activities and the operation and construction of the project itself is demonstrably strong and unbreakable.” In such cases the significant indirect environmental effects of these off-site activities would need to be assessed: para 102.

166. This caveat is material since, if applied here, it would lead to the opposite result from that which Holgate J reached. The causal connection between the operation of the well site and the use of the oil produced as fuel is, by any standard, “demonstrably strong and unbreakable”, as there are no realistic circumstances in which extraction of the oil will not lead to its use as fuel. Neither will occur without the other. Cause and end-result are inextricably linked so that, on the approach of the Irish Supreme Court, the environmental effects of combustion of the oil would need to be assessed.

167. I would, however, for the reasons already given, reject Holgate J’s approach altogether. Where I respectfully differ from the Irish Supreme Court is that I think it is a false dilemma to assume that the only alternative approach is one that is entirely open-ended. I have explained why the EIA Directive does not, as I interpret it, impose obligations which are impossibly onerous and unworkable. In particular, only effects which evidence shows are likely to occur and which are capable of meaningful assessment must be assessed. In an important passage of the judgment, at para 110, the Irish Supreme Court gave a compelling justification for its decision which implicitly adopted these criteria. After observing that any future increase in total milk production “is likely not to be entirely independent of the operation of the factory”, Hogan J said:

“Beyond this, however, proof of causality such [as] would satisfy the requirements of the EIA in respect of ‘direct and or indirect significant environmental effects’ remains entirely elusive, contingent and speculative. Its very elusiveness means that it is incapable of measurement or assessment and, hence, cannot be the sort of significant indirect environment effect which article 3(1) of the EIA Directive must be taken necessarily to contemplate.”

168. In my view, this reasoning clearly articulates the relevant distinction between that case and the present case.

Greenpeace Nordic

169. Since the oral hearing of this appeal, a court in Norway has decided the same issue that we must decide. The Norwegian case is a sequel to proceedings brought to challenge the grant of licences by the Norwegian government for petroleum production. One issue in the earlier Norwegian proceedings was whether, before the relevant area of the South Barents Sea had been opened for petroleum exploration and production, an EIA should have been carried out which assessed the possible combustion emissions if production licences were awarded and development consent given for plans for the development and operation of particular fields. That earlier case reached the Supreme Court of Norway which, by a majority of 11 to 4, rejected the challenge: see *Nature and Youth Norway v The State of Norway (represented by the Ministry of Petroleum and Energy)*, judgment dated 22 December 2020, HR-2020-2472-P (Case No 20-051052SIV-HRET).

170. The majority judgment explained that, at the time of the decision to open the relevant area, it was highly uncertain whether petroleum would be found and, if found, whether in amounts sufficient to make extraction commercially viable. The majority also emphasised that a production licence did not give an unconditional right to

extraction even if profitable discoveries should be made. Extraction would require development consent. Before this was granted, an EIA would normally be required, which would need to assess GHG emissions: see paras 216-223. Relevantly for the subsequent proceedings, the majority judgment also pointed out that, when assessing GHG emissions as part of the climate impact of a measure or project, it is irrelevant where geographically the GHG emissions occur, as the environmental effect of GHG emissions is in principle the same irrespective of where on earth the emissions take place: see para 225.

171. The later case was brought after development consent had been granted for three projects. All three projects involved the extraction of petroleum in quantities which made an EIA mandatory before consent could be granted. The EIAs carried out did not assess the combustion emissions from the oil and gas to be produced. On 18 January 2024 the Oslo District Court ruled that there was a legal requirement to assess the combustion emissions under both the EIA Directive and the Norwegian regulations which implement the EIA Directive. As such an assessment had not been made, the consents granted for the development and operation of the three oil fields were declared to be invalid: see *Greenpeace Nordic v The State of Norway (represented by the Ministry of Petroleum and Energy)*, Case No 23-099330TVI-TOSL/05.

172. In interpreting the EIA Directive, the court thought it clear, in particular from article 3(1) and Annex IV, para 5, that not only direct local environmental impacts resulting from the development and production are covered, and that all relevant climate impacts resulting from the project must be taken into account. The express requirement to assess “indirect” effects shows that “it cannot be decisive that the combustion emissions do not occur on site in connection with production, and that instead they occur later via one or more intermediate steps as combustion emissions elsewhere”: p 52. In rejecting the Government’s argument that combustion emissions are not effects of the project for the purpose of the EIA Directive, the court held, at pp53-54, that:

“combustion emissions from petroleum extraction are such a significant and particularly characteristic consequence of these kinds of projects that they must clearly be considered indirect climate effects within the meaning of the EIA Directive. The whole purpose of petroleum extraction is to make geologically stored carbon available in the form of oil or gas. Greenhouse gas emissions from the carbon are thus both an inevitable and intentional effect from the project. ... If combustion emissions are not included, this will mean that the provisions of the EIA Directive on the assessment of indirect climate impacts from petroleum operations will in practice have no real content.”

173. As a judgment of a foreign court, although on the very question in issue before us, this decision only has authority in so far as its reasoning is persuasive. I do find the reasoning of the Oslo court persuasive and agree with it. It entirely accords with what I consider to be the proper interpretation of the EIA Directive.

15. Conclusion

174. The council's decision to grant planning permission for this project to extract petroleum was unlawful because (i) the EIA for the project failed to assess the effect on climate of the combustion of the oil to be produced, and (ii) the reasons for disregarding this effect were flawed. I would therefore allow the appeal.

LORD SALES (dissenting, with whom Lord Richards agrees):

175. This appeal is concerned with the obligation to carry out an environmental impact assessment ("EIA") in relation to a development to drill for oil. The question is whether the public authority with responsibility to carry out the EIA before granting planning consent for such development is required to assess the impact of greenhouse gas emissions resulting not just from the drilling operation itself but also from the eventual use of the oil as fuel, once it has been refined elsewhere. This depends on the proper construction of Directive 2011/92 EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment ("the EIA Directive") and the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 ("the EIA Regulations") which implement that Directive. These downstream emissions were referred to at the hearing by counsel for the appellant as scope 3 greenhouse gas emissions, drawing on the terminology used in the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard developed under the auspices of the World Resources Institute and the World Business Council for Sustainable Development ("the GHG Protocol").

176. The parties are agreed that the EIA Regulations accurately transpose the EIA Directive into national law, so it is appropriate to focus on the Directive, which is the basic source for the relevant rules, rather than the Regulations. The detail regarding the corresponding provisions in the EIA Regulations is set out in the judgment of Holgate J at first instance, [2020] EWHC 3566 (Admin); [2021] PTSR 1160, at paras 33-45 and it is not necessary to repeat it here. Article 3(1) of the EIA Directive provides that an EIA of a project should identify, describe and assess "the direct and indirect significant effects of a project" on various factors, including "land, soil, water, air and climate". Put shortly, the question which arises is whether, on proper interpretation of the EIA Directive, the downstream greenhouse gas emissions at issue are "indirect significant

effects” on the climate “of [the] project” in this case, namely the drilling to extract crude oil to be refined elsewhere and then used by consumers.

177. The first respondent (“the Council”) is the local planning authority for its area. On 27 September 2019 it granted planning permission for development of an oil well at the Horse Hill Well Site (“the Site”), near Horley in Surrey. The second respondent (“HHDL”) is the developer. It wishes to drill at the Site for crude oil which has been discovered there.

178. The appellant represents the Weald Action Group which objects to drilling at the Site. She has brought these judicial review proceedings to challenge the grant of planning permission.

179. The third respondent (“the Secretary of State”) opposes the appeal. The first intervener, Friends of the Earth, made written submissions in support of the appellant’s case, as they did below. Greenpeace Ltd was given permission to intervene in the appeal to make written submissions. It supports the appellant’s case. The Office for Environmental Protection, an independent non-departmental public body established under section 22 of the Environment Act 2021, was also given permission to intervene in the appeal to make written submissions. It too supports the appellant’s case. West Cumbria Mining Ltd has an interest in a similar mineral extraction development elsewhere and was also given permission to intervene in the appeal to make written submissions. It supports the submissions made by HHDL and the Secretary of State.

180. After the hearing, the court asked for additional submissions in writing to explain the background to amendments which were incorporated into the EIA Directive by Directive 2014/52/EU (“the 2014 Directive”).

Scope 1, scope 2 and scope 3 greenhouse gas emissions

181. The appellant’s counsel framed their submissions with reference to the concept of scope 3 greenhouse gas emissions. This calls for some explanation. The terminology of scope 1, scope 2 and scope 3 greenhouse gas emissions is taken from the GHG Protocol developed to assist companies to understand and report on their greenhouse gas emissions. The first edition of the GHG Protocol was issued in 2001. It defined three “scopes” of greenhouse gas emissions for accounting and reporting purposes. Scope 1 is direct emissions from sources that are owned or controlled by the company, for example emissions from combustion in owned or controlled boilers, furnaces, vehicles etc. Scope 2 is “electricity indirect [greenhouse gas] emissions” from the generation of purchased electricity consumed by the company within the organisational boundary, for which the company should account even though the emissions physically occur at the facility where the electricity is generated. Scope 3 is all other indirect greenhouse gas

emissions, an optional reporting category under the GHG Protocol that covers emissions which are a consequence of the activities of the company but occur from sources not owned or controlled by the company. This is a very wide category which covers both emissions which are “upstream” from the company’s own activities but to which those activities give rise and emissions which are “downstream” from the company’s activities.

182. Reference to scope 3 greenhouse gas emissions can be a useful shorthand and was treated as such in the course of argument. However, the EIA Directive does not refer to the GHG Protocol and does not employ the concepts or the scope 1, scope 2 and scope 3 framework set out in it. None of the authorities from the Court of Justice of the European Union (formerly the European Court of Justice – I refer to them both as “the CJEU”) or domestic or other courts explains the scope and application of the EIA Directive in terms of the concepts used in the GHG Protocol.

Factual background

183. The extraction of hydrocarbons for exploration or production is a type of minerals development which requires planning permission to be granted by the local planning authority. Other regulatory approvals may be required as well, including environmental permits. Applications for planning permission for fossil fuel development relate both to the works on the site (such as well construction) and to the process of extraction of the fuel from the ground which follows. Planning permission for such development is not concerned with the refinement or processing of the extracted oil at other places.

184. On 16 January 2012 the Council granted planning permission for the construction of an exploratory well and for short-term testing for oil at the Site. When oil was discovered, HHDL applied for planning permission to drill and test an appraisal well and a sidetrack well, which was granted on 1 November 2017. Following further work, HHDL decided that the extraction of oil at the Site was commercially viable.

185. On 20 December 2018 HHDL applied for planning permission to drill a well at the Site and to operate it for commercial extraction of the oil (“the development”). The development would take place over a total period of about 25 years, allowing for a first stage of drilling and commissioning of the well, oil production lasting about 20 years, and then decommissioning and site restoration works.

186. The amount of crude oil to be extracted over the lifetime of the development could be as much as about 3.3 million tonnes. Once extracted, it would be taken by tankers to refineries elsewhere for processing. Once refined, it would become useable as fuel. The refined product is likely to be used predominantly for transportation, with

some used also for heat, manufacturing and petrochemicals. It is not possible to say at this stage whether the refining would take place in the UK or overseas, nor whether the refined product would be used in the UK or overseas.

187. The development is EIA development within the meaning of the EIA Directive and the EIA Regulations, and so required an EIA to be carried out before the grant of planning permission, because it is a project for the “extraction of petroleum ... for commercial purposes where the amount extracted exceeds 500 tonnes/day”: see article 4(1) of the EIA Directive and point 14 of Annex I to the EIA Directive (“Annex I”) and regulation 2 of the EIA Regulations and para 14 of Schedule 1 to those Regulations.

188. Where an EIA is required, the developer has to submit an environmental statement to provide relevant environmental information to the local planning authority. The developer can ask the local planning authority for a scoping opinion to ascertain what matters should be covered in its environmental statement, and HHDL duly asked the Council for such an opinion.

189. On 25 October 2018 the Council issued its scoping opinion (“the Scoping Opinion”), which stated (para 3.9):

“[The Council] is of the opinion that the primary focus for the EIA should be the potential effects of the scheme on population and human health (regulation 4(2)(a) [of the EIA Regulations]), on the water environment (regulation 4(2)(c) [of the EIA Regulations]) and on the global climate (regulation 4(2)(c) [of the EIA Regulations]).”

190. The Scoping Opinion observed that direct emissions of greenhouse gases associated with the construction and operation of the well site, and the consumption of fuel by vehicle, plant and equipment associated with the well site, would be likely to be small in scale “and whilst contributing to increased concentrations of greenhouse gases in the atmosphere could not be classed as significant in their own right” (para 3.12). On the other hand, the Scoping Opinion said “the indirect effects associated with the production and sale of fossil fuels which would likely be used in the generation of heat or power, consequently giving rise to carbon emissions, cannot be dismissed as insignificant”, but continued “[i]t is acknowledged that the contribution of the proposed development would be modest when considered in a national or regional context” (para 3.13). The Scoping Opinion set out the Council’s recommendation, at para 3.14, that the environmental statement “should consider, in particular, the global warming potential of the oil and gas that would be produced by the proposed well site.”

191. In December 2018 HHDL submitted its environmental statement (“the Environmental Statement”). This dealt with a wide range of matters relevant to the development. Chapter 6 of the statement addressed greenhouse gas emissions. It stated that the scope of the assessment it contained on that topic was “confined to the direct releases of greenhouse gases from within the well site boundary resulting from the site’s construction, production, decommissioning and subsequent restoration over the lifetime of the proposed development.” The emissions assessed were those from the combustion of diesel fuel in the process of construction and by heavy goods vehicles servicing the development and by on-site engines and generators used in the development, and from the combustion of natural gas in flares in the course of the operation of the development. The Environmental Statement did not contain an assessment of the scope 3 greenhouse gas emissions associated with the downstream refining of the oil and use of the refined fuel away from the Site.

192. HHDL justified this by saying that “[t]he essential character of the proposed development is the extraction and production of hydrocarbons and does not extend to their subsequent use by facilities and process[es] beyond the planning application boundary and outwith the control of the site operators.” It referred to national planning policy and guidance which indicated that decision-makers should focus on whether development is an acceptable use of land rather than on control of downstream emissions from hydrocarbons, which is the subject of regulation under regimes apart from planning law.

193. It is common ground, and indeed obvious, that it is inevitable that oil produced from the Site will be refined and that the refined end product will eventually undergo combustion which will produce greenhouse gas emissions. The refining process and eventual combustion of the refined oil will take place at locations other than the Site. It is agreed that it is scientifically possible to calculate the likely level of greenhouse gas emissions from the combustion of a given quantity of hydrocarbons using a methodology set out in guidance issued by the Institute of Environmental Management and Assessment.

194. In June 2019 the Council’s designated officer, Dr Jessica Salder, carried out a review of the Environmental Statement (“the ES Review”). She concluded that the Environmental Statement responded “in an appropriate and proportionate manner” to regulation 4(2) and the relevant parts of Schedule 4 to the EIA Regulations (which correspond to article 1(g) and Annex IIA to the EIA Directive) and contained sufficient information to comply with the EIA Regulations and the EIA Directive. She stated that the Council accepted the justification given by HHDL for excluding consideration of the global warming potential of the hydrocarbons produced from the development from the scope of the EIA process.

195. The Council’s Planning and Regulatory Committee (“the Council Committee”) considered HHDL’s planning application at a meeting on 11 September 2019, with the benefit of an officers’ report (“the Officers’ Report”) which recommended the grant of planning permission for the development, subject to conditions. The report summarised the EIA process, which had included three consultation exercises. In all, 1,658 written representations had been received, of which about 921 supported the development and 717 objected to it. The issue of climate change was identified as one of about 30 main points of public concern. The report summarised the Environmental Statement on that topic. It stated that the Council had concluded that the development would not give rise to significant impacts on the climate as a result of emissions of greenhouse gases directly attributable to its implementation and operation. The officers were not thereby indicating that they had ignored the reference to “indirect” effects of the project contained in article 3(1) of the EIA Directive (they had already referred to the relevant legislation), but rather that they took the view that the downstream greenhouse gas emissions at issue in this case did not fall within the scope of that provision.

196. The Officers’ Report set out the European Union and national policy context, including in relation to climate change. So far as concerns national policy guidance in relation to the grant of planning permission for mineral extraction, para 205 of the National Planning Policy Framework (“NPPF”) states that great weight should be given to its benefits, including to the economy. Relevant national policy in relation to energy was set out in the UK’s 2007 Energy White Paper, “Meeting the Energy Challenge” (Cm 7124), which included as policy goals reduction of CO₂ emissions by some 60% by 2050 and maintenance of the reliability of energy supplies. The policy in the White Paper was reflected in a number of statutes, including the Climate Change Act 2008 and the Energy Act 2008. The Officers’ Report explained that the Climate Change Act 2008 introduced a target for reduction of the UK’s greenhouse gas emissions by 2050, with a system of national carbon budgets for five-year periods to drive progress towards that objective (in June 2019, the target set out in the Climate Change Act 2008 was amended to the current net zero target by the Climate Change Act 2008 (2050 Target Amendment) Order 2019, SI 2019/1056). In addition, the UK had signed up to the EU Renewable Energy Directive 2009/28/EC which set individual targets for each member state. The Government produces Annual Energy Statements which reflect the policy adumbrated in the 2007 Energy White Paper and recognise the need for investment in oil and gas production as a component of the transition towards a low carbon economy.

197. The Officers’ Report referred to objections that the development would be incompatible with international and national objectives on climate change. The authors concluded that “given the production function of the development, it is not in conflict with the Government’s policy and climate change agenda” and that on the basis of Government policy guidance “there is a national need for the development”, subject to it satisfying other national policies and policies in the development plan. This view was repeated in an update prepared for the meeting of the Council Committee, which took account of the effect of a successful legal challenge to part of the Government’s policy guidance in the NPPF. There is no challenge in this appeal to this assessment that the

development is supported by national policy in relation to energy production and climate change.

198. However, the appellant says that there is an inconsistency in the analysis of material planning considerations in the Officers' Report, as adopted by the Council in its decision ("the inconsistency point"). The Council did not take quantified downstream greenhouse gas emissions into account in its EIA in relation to its decision to grant planning permission, but it did take into account as a material consideration the Government's relevant policies relating to climate change, which had regard to the use to which the refined oil would ultimately be put as fuel for combustion. This is said to demonstrate unlawfulness on the part of the Council, in that the need for the oil which was to be extracted weighed in favour of the proposed development, but the Council omitted to weigh in the balance the negative impact that downstream greenhouse gas emissions would have on climate change. The inconsistency point was not one of the grounds of challenge in the appellant's pleaded claim in the High Court, but was introduced by way of reply submissions for the appellant in the Court of Appeal.

199. The Officers' Report also explained that in addition to planning permission, the operation of the Site would require other consents including an environmental permit issued by the Environment Agency and licences for drilling and flaring issued by the Oil and Gas Authority. It explained that the Government licenses the exploration, appraisal and production of hydrocarbons.

200. At its meeting on 11 September 2019 the Council Committee approved the grant of planning permission for the development.

The legal challenge

201. On 8 November 2019 the appellant commenced her judicial review challenge to the Council's decision to grant planning permission for the development. Permission to apply for judicial review was initially refused by Lang J. However, upon renewal of the application in the Court of Appeal Lewison LJ granted the appellant permission to apply for judicial review of the Council's decision on the grounds that (1) the Council failed to comply with its EIA obligations under the EIA Directive and the EIA Regulations by (a) failing to assess the indirect downstream greenhouse gas emissions in relation to the development arising from the combustion of the oil it will produce and/or (b) failing to take into account the environmental protection objectives established by the UK which are relevant to the project, namely the urgent need to address the climate crisis and the requirement to reduce greenhouse gas emissions by at least 100% below the 1990 baseline; (2) the Council misinterpreted provisions of the NPPF and the Minerals section of the national Planning Policy Guidance ("nPPG") as permitting downstream greenhouse gas emissions to be excluded from assessment, in breach of the EIA

Directive and the EIA Regulations; and (a new ground which Lewison LJ directed should be added to the claim) (3) the NPPF and the nPPG fail to conform with the EIA Directive and the EIA Regulations. As a result of the addition of ground (3), the Secretary of State was added as a party to the proceedings. The inconsistency point was not a part of the grounds of challenge.

202. Holgate J dismissed the claim on all grounds. In his view, the downstream greenhouse gas emissions were not effects, direct or indirect, “of [the] project” comprised in the development and so did not fall within article 3(1) of the EIA Directive. On its proper interpretation, the EIA Directive required there to be a closer connection between any direct and indirect effects relied upon and the project in question. He pointed out the wide-ranging effect of the appellant’s submissions in relation to ground (1)(a), which was the main issue in the claim. The Environmental Statement and the Council’s EIA assessed the greenhouse gases that would be produced from the operation of the development itself, but the appellant contended that the EIA should have assessed the greenhouse gases which would be emitted when the crude oil produced from the Site is refined elsewhere and then used by consumers. It was agreed that once the crude oil was transported off-site it enters, in effect, an international market, and the refined product could be used anywhere in the world. Moreover, if correct, the appellant’s submissions would have ramifications for a range of other production processes. For example, the production of metals, then their use to manufacture components and then motor vehicles or aircraft, all at different locations where the processes will result in greenhouse gas emissions, will also lead to greenhouse gas emissions from their use by consumers and airlines. Holgate J also gave the example of the successive stages involved in the handling of waste, recycling, recovery and disposal to landfill, each one of which can generate greenhouse gases.

203. Holgate J set out the statutory and national policy framework and reviewed the facts in detail. As to ground (1)(a), he emphasised that the formula used in the EIA Directive is that an EIA is required of the effects (direct and indirect) “of the project” (the corresponding formula in the EIA Regulations used the word “development” in place of “project”, in order to integrate the EIA Directive into the UK planning system through use of the relevant national terminology). Holgate J rejected the suggestion that it is sufficient if the environmental effects of consuming an end product will flow inevitably from the use of a raw material in making that product, and held instead that “the true legal test is whether an effect on the environment is an effect of the development for which planning permission is sought”; he observed that “[a]n inevitable consequence may occur after a raw material extracted on the relevant site has passed through one or more developments elsewhere which are not the subject of the application for planning permission and which do not form part of the same ‘project’”: para 101. His conclusion from a review of domestic and European case law on the EIA Directive was that, as a matter of law, on the proper interpretation of the Directive, an “EIA must address the environmental effects, both direct and indirect, of the development for which planning permission is sought ... but there is no requirement to assess matters which are not environmental effects of the development or project”: para

126. He noted that an obligation could arise to carry out an EIA of any larger project of which the development forms part, but it was not suggested that the development was part of any such larger project.

204. Although not critical for his decision, Holgate J also pointed out that there are other measures in place within the UK for assessing and reducing greenhouse gas emissions from the combustion of oil products in motor vehicles, including the net zero target in the Climate Change Act 2008 and the statutory carbon budgets on a national level issued pursuant to that Act. In addition, the estimation of greenhouse gas emissions from downstream combustion of oil and control through the statutory carbon budgets is carried out at a national level annually and emissions of greenhouse gases from road transport are the subject of national policy designed to reduce them as part of the steps being taken to achieve the 2050 net zero target. As part of the national policy response to the need to reduce greenhouse gas emissions, a national Emissions Trading Scheme has been introduced by the Greenhouse Gas Emissions Trading Scheme Regulations 2012 (SI 2012 No 3038).

205. Holgate J held that ground (1)(b) lived with ground (1)(a) and fell away with it. He considered grounds (2) and (3) together and rejected them because of his conclusion on ground (1)(a). In any event, the NPPF and the nPPG did not purport to limit the scope of EIA obligations arising under the EIA Directive and the EIA Regulations.

206. With permission granted by Lewison LJ, the appellant appealed to the Court of Appeal in relation to ground (1)(a). The Court of Appeal, by a majority (Sir Keith Lindblom, Senior President of Tribunals, and Lewison LJ, Moylan LJ dissenting), dismissed the appeal: [2022] EWCA Civ 187; [2022] PTSR 958. Sir Keith Lindblom reviewed the legislative regime and caselaw on that regime of the CJEU. Like Holgate J, Sir Keith Lindblom held that an EIA was required of the direct and indirect environmental effects “of the proposed development” itself (that is, of the construction and operation of the oil well at the Site) not of end products far-removed from that project: paras 31 and 38-39. The extraction of crude oil for commercial purposes was “the essential content and character of the proposed development”: “[t]hat was the project”, and neither the subsequent refinement of the crude oil nor the ultimate use of the products generated by that refinement were part of that project: para 33.

207. However, departing from Holgate J’s approach, Sir Keith Lindblom considered that whether the degree of connection required between a development and its putative effects was sufficiently close for them to count as “indirect” effects of a project within the meaning of the EIA Directive and the EIA Regulations is a matter for evaluative assessment by the Council as the planning authority: paras 41-43. In his view, therefore, the outcome of the appeal turned not on a hard-edged question of law, but on the lawfulness of the decision of the Council to decide that the scope 3 greenhouse gas emissions were not “indirect significant effects” of the proposed development or project

(see article 3(1) of EIA Directive). This was a matter of fact and evaluative judgment for the Council, challengeable only on *Wednesbury* rationality grounds (*Associated Provincial Picture Houses Ltd v Wednesbury Corpn* [1948] 1 KB 223): para 57. The Council's assessment could not be said to be irrational: para 61. It was relevant to this conclusion that there were many intermediate steps to be gone through before the crude oil from the Site could be combusted as fuel, including that it had to be refined, yet it had not been suggested that the environmental impacts resulting from the intermediate process of refinement ought to have been subject to an EIA in the context of the development: paras 65-66.

208. Partly as a response to this analysis, the appellant introduced the inconsistency point in her submissions in the Court of Appeal. No objection seems to have been taken to this and it is agreed by the parties to be an issue for determination in the appeal to this court. Sir Keith Lindblom dismissed the challenge based on the inconsistency point: paras 90-92. He held that it was proper for the Council to take into account as material considerations that the development would "in a general sense" help to meet a continuing national need for identified reserves of on-shore hydrocarbons to be husbanded and the relevant Government policies relating to climate change. It was not incumbent on the Council to estimate the precise contribution which the oil produced at the Site might make to meeting the continuing national need for hydrocarbons, nor the particular impacts, positive or negative, of using the refined products of that oil.

209. Lewison LJ delivered a short concurring judgment. He agreed that the real question was not that posed by Holgate J, as to the proper interpretation of the EIA Directive, but the degree of connection needed to link a "project" and a putative effect. This was a question of fact or evaluative judgment for the Council as the planning authority, which could only be impugned for irrationality or on other public law grounds. He considered that the Council had not ignored the downstream global warming effect of the development and that it was lawfully entitled to decide that this was not an indirect effect of the project for the purposes of the EIA Directive.

210. Moylan LJ agreed with much of the judgment of Sir Keith Lindblom, but dissented on the basis that the Council's assessment regarding the lack of connection between the project and the downstream greenhouse gas emissions was legally flawed. He focused on point 14 in Annex I to the EIA Directive. Annex I sets out cases where an EIA is mandatory, without the need for any screening assessment. Point 14 is the provision of Annex I applicable in this case, which meant that an EIA of the development was required. Point 14 stipulates that an EIA is required in the case of a project of this description:

“(14) Extraction of petroleum and natural gas *for commercial purposes* where the amount extracted exceeds 500 tonnes/day

in the case of petroleum and 500,000 cubic metres/day in the case of gas.” (emphasis added)

In Moylan LJ’s view, the language of the provision indicates that it is the extraction of petroleum “for commercial purposes”, and not the surface installations or the deep drilling (matters covered in point 2 of Annex II to the EIA Directive, headed “Extractive Industry”, and in Schedule 2 to the EIA Regulations, as cases requiring a screening assessment) which caused the drafters of the EIA Directive to include this item in Annex I. He accepted the appellant’s submission that since an EIA in relation to the development was required by point 14 of Annex I to the EIA Directive by virtue of the extraction of petroleum for commercial purposes, this showed that the downstream greenhouse gas emissions associated with it were impacts (and so indirect effects) of the project: paras 109-112 and 125-128. Moylan LJ referred in particular to the decision in *R (Squire) v Shropshire Council* [2019] EWCA Civ 888; [2019] Env LR 835 (“*Squire*”) and the judgments of the CJEU in *Abraham v Wallonia* (Case C-2/07) [2008] Env LR 32 (“*Abraham*”) and *Ecologistas en Acción-CODA v Ayuntamiento de Madrid* (Case C-142/07) [2009] PTSR 458 (“*Ecologistas*”) and also called attention to amendments introduced into the EIA Directive by the 2014 Directive to provide for a specific and increased focus on climate change and greenhouse gas emissions. In his view cogent reasons would need to be given to justify exclusion of such emissions, which were an inevitable effect of the downstream use of the oil, from the EIA exercise, and those given by the Council were not sufficient.

The EIA legislative regime

The 1985 Directive

211. The requirement to undertake an EIA before granting planning consent for certain projects was first introduced into European law by Council Directive 85/337/EEC (“the 1985 Directive”). The essential elements of the regime were the same as those under the EIA Directive in its present form. In outline, by virtue of article 4(1) an EIA was required for projects listed in Annex I (the list being shorter than it now is in the EIA Directive) whereas, by virtue of article 4(2), for projects listed in Annex II a screening assessment would be required in order to determine whether they should be made subject to an EIA. Article 3 provided that an EIA should identify, describe and assess “the direct and indirect effects of a project on”, among other factors, “soil, water, air, climate and the landscape”. Article 2(2) provided that the EIA process could “be integrated into the existing procedures for consent to projects in the Member States”; so in the UK, by regulations to implement the 1985 Directive, it was made part of the procedure leading to the grant of planning permission. Article 1(5) provided that the 1985 Directive did not apply to “projects the details of which are adopted by a specific act of national legislation, since the objectives of this Directive, including that of supplying information, are achieved through the legislative process.”

212. The language used in article 3(1) of the EIA Directive which is central to this appeal, requiring an EIA to cover “significant indirect effects” of a project, is taken from the 1985 Directive, which was consolidated into the EIA Directive. The appellant relies on the similarity of that language with the way in which scope 3 emissions are defined in the GHG Protocol to refer to “indirect” greenhouse gas emissions in order to suggest that the EIA Directive requires an EIA for a project to cover all of the scope 3 emissions associated with that project.

213. However, the language of the EIA Directive, as derived from the 1985 Directive, was adopted by the EU legislator well before the GHG Protocol was drafted and does not refer to the concepts set out in that protocol. Moreover, the concepts in the GHG Protocol have been developed for a different purpose from the purposes pursued by the 1985 Directive and the EIA Directive: in the former case to provide a standardised approach to accounting for and reporting on the activities of corporate entities; in the latter, to ensure consideration of the effects of particular projects for which planning permission is sought. The 1985 Directive and the EIA Directive which replaced it have their own scheme and conditions of application and I do not consider that one can infer any intention on the part of the EU legislator that the indirect effects of a project to which the Directives refer should be taken to include the full ambit of scope 3 emissions as referred to in the GHG Protocol.

The EIA Directive

214. The 1985 Directive was amended several times. The EIA Directive was enacted “in the interests of clarity and rationality” to codify the 1985 Directive as amended: recital (1) to the EIA Directive. It was intended to harmonise “the principles of the assessment of environmental effects”, including the main obligations of developers and the content of the assessment: recital (3) (which also notes that Member States could lay down stricter rules to protect the environment). Recital (6) states that general principles for the assessment of environmental effects should be laid down with a view to supplementing and coordinating development consent procedures. Other relevant provisions of the EIA Directive are as follows.

215. Recital (7) provides:

“Development consent for public and private projects which are likely to have significant effects on the environment should be granted only after an assessment of the likely significant environmental effects of those projects has been carried out. That assessment should be conducted on the basis of the appropriate information supplied by the developer,

which may be supplemented by the authorities and by the public likely to be concerned by the project in question.”

Recital (8) states that projects of certain types “have significant effects on the environment” and so should generally be subject to an EIA (ie Annex I projects), while recital (9) says that projects of other types may not have such effects in every case but should be subject to an EIA where Member States “consider that they are likely to have significant effects on the environment” (ie Annex II projects, which are to be screened to determine whether they should be subject to an EIA). Recital (10) states that Member States may set thresholds or criteria for screening purposes.

216. Recitals (22) and (24) provide:

“(22) However, this Directive should not be applied to projects the details of which are adopted by a specific act of national legislation, since the objectives of this Directive, including that of supplying information, are achieved through the legislative process.

...

(24) Since the objectives of this Directive cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale and effects of the action, be better achieved at Union level, the Union may adopt measures in accordance with the principle of subsidiarity as set out in article 5 of the Treaty on European Union. In accordance with the principle of proportionality, as set out in that article, this Directive does not go beyond what is necessary in order to achieve those objectives.”

217. The EIA Directive post-dates the GHG Protocol but the recitals make no reference to it. The EIA Directive does not refer to or seek to employ the scope 1, scope 2 and scope 3 concepts set out in the protocol. Instead, it is made clear that the EIA Directive re-enacts the scheme of the 1985 Directive and uses the same basic concepts and terms as had been employed in that Directive.

218. Article 1(1) of the EIA Directive provides that the Directive “shall apply to the assessment of the environmental effects of those public and private projects which are likely to have significant effects on the environment.”

219. Article 1(2) sets out certain definitions. “Project” is defined in sub-para (a) to mean “the execution of construction works or of other installations or schemes” and “other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources”. “Public concerned” is defined in sub-para (e) to mean “the public affected or likely to be affected by, or having an interest in, the environmental decision-making procedures referred to in article 2(2)”, with an extension to deem certain non-governmental organisations promoting environmental protection as having an interest. EIA is defined in sub-para (g) to mean:

“a process consisting of:

(i) the preparation of an environmental impact assessment report by the developer, as referred to in article 5(1) and (2);

(ii) the carrying out of consultations as referred to in article 6 and, where relevant, article 7;

(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with article 5(3), and any relevant information received through the consultations under articles 6 and 7;

(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and

(v) the integration of the competent authority’s reasoned conclusion into any of the decisions referred to in article 8a.”

220. Article 2(1) stipulates that Member States shall adopt measures to ensure that before development consent is given “projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location” are made subject to a requirement for such consent and “an assessment with regard to their effects on the environment”, such projects being defined in article 4. As in the 1985 Directive, article 2(2) provides that the EIA “may be integrated into the existing procedures for development consent to projects in the Members States”, which in the UK means the existing planning system in which decisions on planning permission are usually taken

by local planning authorities. Throughout the EU the implementation of the EIA Directive tends to be decentralised, as it is often the case that regional and local authorities are responsible for its application: see para 235 below.

221. Following the equivalent provision in the 1985 Directive, article 3(1) provides in relevant part as follows:

“The [EIA] shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

...

(c) land, soil, water, air and climate ...”

222. Article 4(1) provides that projects listed in Annex I shall be subject to an EIA. Article 4(2)-(4) provides that projects listed in Annex II should be screened to determine whether an EIA is required according to selection criteria set out in Annex III, and on the basis of information provided by the developer as specified in Annex IIA. As set out in Annex IIA, this information comprises a description of the project (point 1), “a description of the aspects of the environment likely to be significantly affected by the project” (point 2) and “a description of any likely significant effects ... of the project on the environment resulting from: (a) the expected residues and emissions and the production of waste, where relevant; (b) the use of natural resources, in particular soil, land, water and biodiversity” (point 3).

223. Annex III sets out the selection criteria applicable under article 4(3). These include the “characteristics of projects” (point 1), “with particular regard to”, among other things, “cumulation with other existing and/or approved projects” (para (b)), “the use of natural resources, in particular land, soil, water and biodiversity” (para (c)), “the production of waste” (para (d)), “pollution and nuisances” (para (e)) and “the risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change ...” (para (f)). They also include the “location of projects”, meaning that “the environmental sensitivity of geographical areas likely to be affected by projects must be considered” (point 2); and the “type and characteristics of the potential impact” (point 3), meaning that “the likely significant effects of projects on the environment must be considered in relation to criteria set out in points 1 and 2 [of Annex III], with regard to the impact of the project on the factors specified in Article 3(1), taking into account” various matters including “the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected)” (para (a)), “the transboundary nature of the impact” (para (c)) and “the

cumulation of the impact with the impact of other existing and/or approved projects” (para (g)).

224. Article 5(1) provides that where an EIA is required the developer shall prepare an EIA report (that is, in the present case, the Environmental Statement) which shall include:

“(a) a description of the project comprising information on the site, design, size and other relevant features of the project;

(b) a description of the likely significant effects of the project on the environment;

(c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;

(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;

(e) a non-technical summary of the information referred to in points (a) to (d); and

(f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.

Where an opinion is issued pursuant to paragraph 2, the [EIA] report shall be based on that opinion, and include the information that may reasonably be required for reaching a reasoned conclusion on the significant effects of the project on the environment ...”

Article 5(2) provides for the developer to be able to request an opinion from the authority which is competent to issue a development consent on the scope and level of detail of the information to be provided for the EIA. This was the procedure followed in

this case: see paras 189-190 above. Article 5(3) provides that where necessary the authority should seek supplementary information from the developer “in accordance with Annex IV, which is directly relevant to reaching the reasoned conclusion on the significant effects of the project on the environment.”

225. Annex IV sets out the information required for the EIA report (it reflects points previously set out in less detail in Annex III to the 1985 Directive). The information includes the following listed items:

(1) Point 1 is “Description of the project”, including “a description of the main characteristics of the operational phase of the project ... for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used” (para (c)) and “an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced ...” (para (d)).

(2) Point 2 is “a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer ... and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”.

(3) Point 3 is “a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed ...”.

(4) Point 4 is “a description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity ..., soil ..., water ..., air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage ... and landscape”.

(5) Point 5 is “a description of the likely significant effects of the project on the environment resulting from, inter alia: (a) the construction and existence of the project ...; (b) the use of natural resources, in particular land, soil, water and biodiversity ...; (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste; (d) the risks to ... the environment (for example due to accidents or disasters); (e) the cumulation of effects with other existing and/or approved projects ...; (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; ...”. It continues:

“The description of the likely significant effects on the factors specified in article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.”

(6) Point 7 is “a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements ...”.

(7) Point 8 is “a description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned ...”.

226. Recitals (16) and (17) refer to public participation in the taking of decisions. Recitals (18) to (21) refer to the UN/ECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (“the Aarhus Convention”), to which the European Community was a party. These recitals introduce article 6. Article 6(1) provides in relevant part that “Member States shall take the measures necessary to ensure that the authorities likely to be concerned by the project by reason of their specific environmental responsibilities or local and regional competences are given an opportunity to express their opinion on the information supplied by the developer and on the request for development consent ...”. Article 6(2) provides in relevant part that “[i]n order to ensure the effective participation of the public concerned in the decision-making procedures, the public shall be informed electronically and by public notices or by other appropriate means, of [various matters relating to EIA of the project] early in the environmental decision-making procedures referred to in Article 2(2) and, at the latest, as soon as information can reasonably be provided.” Article 6(4) provides that “[t]he public concerned shall be given early and effective opportunities to participate in the environmental decision-making procedures referred to in Article 2(2) ...”.

227. Recital (15) refers to EIA in a transboundary context. This introduces article 7. The relevant part of article 7 provides that “[w]here a Member State is aware that a project is likely to have significant effects on the environment in another Member State or where a Member State likely to be significantly affected so requests”, the first Member State shall send a description of the project and give the affected Member State an opportunity to participate in the decision-making procedures referred to in article

2(2). In addition, information should be provided to the public concerned in the territory of the affected Member State so that they have an opportunity to participate in the consultation process. Article 7(4) provides that the Member States concerned “shall enter into consultations regarding ... the potential transboundary effects of the project and the measures envisaged to reduce or eliminate such effects and shall agree on a reasonable time-frame for the duration of the consultation period. ...”.

228. Article 8 provides that the results of the consultations and information gathered pursuant to articles 5 to 7 “shall be duly taken into account in the development consent procedure”. Article 8a(1) provides that the decision to grant development consent shall incorporate (a) the authority’s reasoned conclusion referred to in article 1(2)(g)(iv) and (b) “any environmental conditions attached to the decision, a description of any features of the project and/or measures envisaged to avoid, prevent or reduce and, if possible, offset significant adverse effects on the environment as well as, where appropriate, monitoring measures.” Member States shall ensure that any such features of the project and measures “are implemented by the developer” and shall determine monitoring procedures; and “[t]he type of parameters to be monitored and the duration of the monitoring shall be proportionate to the nature, location and size of the project and the significance of its effects on the environment”: article 8a(4). The main reasons for a refusal of development consent should be stated: article 8a(2).

229. Article 11(1) requires Member States to ensure that “members of the public concerned: (a) having a sufficient interest, or alternatively; (b) maintaining the impairment of a right, where administrative procedural law of a Member State requires this as a precondition” have access to a review procedure before a court of law or equivalent body “to challenge the substantive or procedural legality of decisions, acts or omissions subject to the public participation provisions of this Directive”.

230. Annex I sets out the projects referred to in article 4(1) for which an EIA is mandatory. These include “crude-oil refineries ... and installations for the gasification and liquefaction of 500 tonnes or more of coal or bituminous shale per day” (point 1); “thermal power stations and other combustion installations with a heat output of 300 megawatts or more” and nuclear power stations and reactors “except research installations” whose output is below a certain level (point 2); “integrated works for the initial smelting of cast iron and steel” and certain “installations for the production of non-ferrous crude metals from ore, concentrates or secondary raw materials” (point 4); installations for extraction and processing of asbestos and products containing asbestos, and “for asbestos-cement products, with an annual production of more than 20,000 tonnes of finished products, for friction material, with an annual production of more than 50 tonnes of finished products ...” (point 5); construction of “airports with a basic runway length of 2,100 m or more” and of roads of four or more lanes which are 10 km or more in length (point 7); waterways and ports for vessels of over 1,350 tonnes (point 8); waste disposal installations for the incineration of non-hazardous waste with a capacity exceeding 100 tonnes per day (point 10); certain projects for the extraction of

petroleum and natural gas (point 14, set out at para 210 above); industrial plants for the production of paper and board with a production capacity exceeding 200 tonnes per day” (point 18); “Quarries and open-cast mining where the surface of the site exceeds 25 hectares, or peat extraction, where the surface of the site exceeds 150 hectares” (point 19); and “installations for storage of petroleum, petrochemical, or chemical products with a capacity of 200,000 tonnes or more” (point 21). Points 1, 2, 4, 5, 7 and 8 replicated in whole, or in substantial part, items listed in Annex I to the 1985 Directive as requiring an EIA.

231. Annex II sets out the projects referred to in article 4(2) for which a screening opinion is required. These include under point 2, “Extractive Industry”, “quarries, open-cast mining and peat extraction” so far as not covered by Annex I (para (a)); “underground mining” (para (b)); “deep drillings”, “with the exception of drillings for investigating the stability of the soil” (para (d)); and “surface industrial installations for the extraction of coal, petroleum, natural gas and ores, as well as bituminous shale” (para (e)). They also include under point 3, “Energy Industry”, “industrial installations for the production of electricity, steam and hot water”, so far as not covered by Annex I (para (a)); and under point 4, “Production and Processing of Metals”, the “manufacture and assembly of motor vehicles and manufacture of motor-vehicle engines” (para (f)); “shipyards” (para (g)); “installations for the construction and repair of aircraft” (para (h)); and “manufacture of railway equipment” (para (i)). Other projects are listed in relation to the mineral industry (point 5), the chemical industry (point 6), the food industry (point 7), infrastructure projects (point 10) and so forth. In large part these repeat items in Annex II to the 1985 Directive. Certain items listed there were omitted from Annex II to the current EIA Directive, including under point 2 (extractive industry) “extraction of petroleum” (para (f)) and “extraction of natural gas” (para (g)).

The 2014 Directive

232. The text of the EIA Directive in its current form had been amended by the 2014 Directive. Among other changes, this introduced references to “climate change” and to “greenhouse gases”. The highpoint of the appellant’s case focuses upon this language and these changes, so it is appropriate to consider the object and purpose of the 2014 Directive in amending the EIA Directive. Again, although the 2014 Directive post-dates the GHG Protocol it does not refer to the protocol; nor does it seek to make use of the concepts of scope 1, scope 2 and scope 3 emissions set out in the protocol.

233. The 2014 Directive originated in a proposal by the European Commission (“the Commission”) dated 26 October 2012 (“the 2012 Proposal”). The 2012 Proposal was accompanied by a lengthy Impact Assessment (“the 2012 Impact Assessment”) which identified certain shortcomings in relation to the implementation of the EIA regime regarding the screening procedure, the quality and analysis of the EIA and risks of inconsistencies within the process itself. The 2012 Impact Assessment noted that “[a]t

present [ie in 2012], EIA reports do not look at the contributions from projects to the causes of global climate change (in terms of directly and indirectly inducing GHG [greenhouse gas] emissions)” (p 83). The shortcomings identified by the Commission did not relate to the absence of consideration of downstream or scope 3 greenhouse gas emissions from EIA of proposed projects. In the section of the 2012 Impact Assessment headed “Detailed description of the environmental impacts”, the Commission proposed the integration of a “climate assessment” in EIA reports, for which the focus was on the direct and indirect emissions associated with a project subject to an EIA:

“As part of the climate assessment, depending on the character of the project, in some cases not only direct greenhouse gas emissions (eg from on-site combustion of fossil fuels) would have to be assessed, but also indirect impacts of the projects on climate change. For example, for transport infrastructure this could include increased or avoided carbon emissions associated with energy use for the operation of the project ...; for a commercial development this could include carbon emissions due consumer trips. Member States have legally binding greenhouse gas reduction targets and many Member States have also defined greenhouse gas reduction targets at the local level (main cities, regions etc), so the EIA could assess to what extent projects contribute to the achievement of these targets and could identify relevant mitigation and/or offsetting measures that would need to be implemented” (pp 138-139).

The Commission noted (p 9) that incorporation of climate change issues in EIA reports “could be a good opportunity to integrate environmental impacts into the project’s design thereby ensuring a more complete assessment of environmental and climate change impacts of projects and foreseeing appropriate mitigation measures”. The relevant problem identified with the existing EIA regime was that “potential (environmental) impacts of projects to new environmental issues (eg climate, biodiversity) are not sufficiently covered by the EIA Directive”; the solution proposed was to “specify the content of the EIA report and of the final decision”, “streamline environmental assessments” and “adjust the Directive to the new environmental issues” (p 21). The changes proposed in the 2012 Proposal and introduced by the 2014 Directive did not specify that downstream or scope 3 greenhouse gas emissions should be covered by the EIA report and the final decision.

234. In a summary review of issues identified in a consultation exercise in relation to the EIA regime, the 2012 Impact Assessment had earlier noted (p 79) that although article 3 of the EIA Directive refers to both direct and indirect effects of a project, “in practice the environmental impacts described in EIAs are mostly related to direct impacts ..., while indirect impacts and life-cycle impacts are rarely covered in detail (eg

depletion of natural resources due to the use of certain products and materials, greenhouse gas emissions from transportation activities induced by the project, environmental impacts of products manufactured or services provided)". In so far as this item refers to greenhouse gas emissions in terms, the focus is on those from transportation activities in relation to the project itself. This is the only reference in the 2012 Impact Assessment to the environmental impacts of products which have been manufactured, and in that regard it is imprecise, in that a distinction is drawn between indirect impacts and life-cycle impacts. It was not reflected in the Commission's own assessment in the 2012 Impact Assessment of the problems then existing with the EIA regime nor in its proposed solution. This is a significant omission, since the proposed solution involved specifying in more detail what should be included in EIA reports and final decisions in order to ensure greater uniformity of approach across Member States. If the aim of the proposed changes to the EIA Directive had been to require competent authorities to assess all downstream or scope 3 greenhouse gas emissions, one would have expected this to be specified clearly.

235. The 2012 Proposal recommended that the first area of shortcomings referred to above should be addressed by clarifying the screening procedure by modifying the criteria in Annex III and specifying the content and justification of screening decisions; the second area by quality control of EIA information, specification of the EIA report (mandatory assessment of reasonable alternatives etc) and adaptation of the EIA to challenges (ie biodiversity, climate change, disaster risks, availability of natural resources); and the third area by specifying time-frames for the stages of EIA and coordination with other environmental assessments required under other EU legislation. The Commission noted that further guidance was necessary because "the implementation of the Directive is often highly decentralised, as the regional and local authorities are responsible for its application ...". There was a review of the additional costs for developers and public authorities associated with the proposed changes and it was stated that the proposal for amendment complied with the proportionality principle.

236. In 2013, in advance of amendment of the legislation, the Commission published *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* ("the 2013 Guidance"). In the section entitled "Understanding key climate mitigation concerns" the Commission set out a table of "examples of key questions that could be asked when identifying key climate change mitigation concerns", comprising questions relating to direct greenhouse gas emissions, "indirect GHG [greenhouse gas emissions] due to an increased demand for energy" ("will the proposed project significantly influence demand for energy? Is it possible to use renewable energy sources?") and "indirect GHG caused by any supporting activities or infrastructure that is directly linked to the implementation of the proposed project (eg transport ...)" ("Will the proposed project significantly increase or decrease personal travel? Will the proposed project significantly increase or decrease freight transport?"): see p 30. The focus of the proposed questions was an increase in greenhouse gases closely associated with the project itself, as would be involved in increased energy use or vehicular transportation to which the project would give rise.

237. The text of the amendment Directive as proposed by the Commission in the 2012 Proposal was slightly modified in the 2014 Directive, as adopted. However, it clearly continued to reflect the policy objectives specified in the 2012 Proposal and the 2012 Impact Assessment. Recital (7) referred to the greater prominence of certain environmental issues, including climate change, which had become more important in policy making and should constitute “important elements in assessment and decision-making processes”. Recital (13) stated: “Climate change will continue to cause damage to the environment and compromise economic development. In this regard, it is appropriate to assess the impact of projects on climate (for example greenhouse gas emissions) and their vulnerability to climate change”. Neither the recitals to the 2014 Directive nor the text it introduced into the EIA Directive indicate that it was intended that all downstream or scope 3 greenhouse gas emissions should be included within the concept of “indirect effects” of projects for the purposes of the EIA Directive. As the 2012 Impact Assessment explained, authorities across Member States had not previously regarded them as “indirect effects” of projects “on ... climate” within article 3(1) of the EIA Directive (according to the then version of the text of that provision, before the addition of the word “significant” by amendment by the 2014 Directive). The 2013 Guidance only referred to a limited class of emissions as “indirect effects” of projects. If it had been intended that the entirety of the very wide class of scope 3 emissions should also be so regarded, the amendments effected by the 2014 Directive would have made that clear. That would have been necessary in order to ensure a uniform and harmonised approach across Member States in relation to such a fundamental point. It would have constituted a major change of direction and focus for the EIA regime. Instead, as explained further below, the text of the EIA Directive as so amended focused on greenhouse gas emissions arising from the construction and operation of a project itself, together with possible measures for minimising and mitigating such emissions.

238. In 2017 the Commission issued new guidance entitled “Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)”. Under the heading “Legislative requirements and key considerations” the guidance states (p 38) that under Annex IV to the EIA Directive “the emphasis is placed on two distinct aspects of the climate change issue - climate change mitigation: this considers the impact the Project will have on climate change, through greenhouse gas emissions primarily, [and] climate change adaptation: this considers the vulnerability of the Project to future changes in the climate, and its capacity to adapt to the impacts of climate change, which may be uncertain”. So far as the former is concerned, therefore, the emphasis is on what can be done in the course of the planning consent procedure to modify the project to mitigate its effects in terms of greenhouse gas emissions. In relation to this, under the heading “Climate change mitigation: project impacts on climate change”, the guidance states (p 39) that the EIA should include an assessment of the direct greenhouse gas emissions of the project over its lifetime, “eg from on-site combustion of fossil fuels or energy use”, and of emissions “generated or avoided as a result of other activities encouraged by the Project (indirect impacts) eg transport

infrastructure: increased or avoided carbon emissions associated with energy use for the operation of the Project; [and] commercial development: carbon emissions due to consumer trips to the commercial zone where the Project is located.” This confirms the Commission’s understanding that the relevant “indirect effects” of a project in relation to greenhouse gas emissions are those relating to the operation of the project itself. There is no reference to all downstream or scope 3 emissions, as one would have expected in this guidance if the Commission regarded these as falling within the scope of the EIA Directive. Instead, at p 38, the guidance referred back to the 2013 Guidance, which as noted above only referred to far more limited aspects of greenhouse gas emissions.

The Aarhus Convention

239. The Aarhus Convention, referred to in the recitals to the EIA Directive, is concerned, among other things, with promoting access to information and public participation in decision-making in environmental matters. This was followed by Directive 2003/35/EC which amended the previous version of the EIA Directive to align it with the provisions on public participation in the Convention (that is, well before the 2014 Directive). In fact, the relevant part of the Aarhus Convention followed the basic framework for EIA set out in the 1985 Directive. Article 6 of the Convention makes provision for participation by “the public concerned” in decisions on specific activities, which corresponds to an EIA in relation to the grant of planning consent for particular projects. “The public concerned” is defined in article 2(5) in terms similar to the definition of that term in article 1(2)(e) of the EIA Directive (para 219 above). The right to involvement pursuant to article 6 is for the public affected by a specific decision, not for anyone who might be affected by global warming. Article 6(6) of the Convention requires that the public concerned should be provided with, among other things, “a description of the significant effects of the proposed activity on the environment” (sub-para (b)). No further definition is provided. It is not stated that the significant effects “of the proposed activity” include all downstream or scope 3 greenhouse gas emissions and the practice of EU Member States in the period before the 2014 Directive referred to above indicates that they did not regard these as covered by that provision. In like manner, *The Aarhus Convention: An Implementation Guide*, 2nd ed (2014) published by the United Nations Economic Commission for Europe does not suggest that all such emissions fall within article 6(6)(b) of the Convention (see, in particular, p 151).

National policies on climate change and planning

240. The UK’s national climate objectives are set out in the Climate Change Act 2008. Under that Act the national government must account at the national level for all the UK’s greenhouse gas emissions, including scope 3 type emissions within UK territory. Among other things, the Act sets a national carbon target (section 1) and requires the Government to establish carbon budgets for the UK (section 4). It contains

mechanisms to adjust the national target and carbon budgets (in sections 2 and 5, respectively) in the light of new information. The national target is for reduction of greenhouse gas emissions by 2050 and the national system of periodic carbon budgets is directed to achieving that reduction. The statutory carbon budgets are not sub-divided by sector, but are expressed as a total number of tonnes of carbon dioxide equivalent. Under section 14(1), the Secretary of State must lay before Parliament a report setting out proposals and policies for meeting carbon budgets for the current and future budget periods. In December 2011 the Government presented to Parliament a report pursuant to this provision on how it proposed to meet the first four carbon budgets covering the period 2008 to 2027: “The Carbon Plan: Delivering our low carbon future”. This policy document sub-divides greenhouse gas emissions by sector, by reference both to sources and end users, notably power stations, industry, buildings, transport, agricultural and land use, waste and exports. Pursuant to section 16(2), the Secretary of State must submit to Parliament an annual statement of emissions in respect of each greenhouse gas, setting out the steps taken to calculate the net carbon account for the UK. The statement includes scope 3 type emissions (such as from road traffic) and shows whether the national carbon budgets are being met.

241. Emissions of greenhouse gases from road transport are the subject of national policy which is designed to reduce usage of vehicles using combustible carbon fuel as part of the steps taken to achieve the 2050 net zero target, including in particular the Government’s “The Road to Zero” strategy published in 2018 for transition to zero emission road transport.

242. At a conference held pursuant to the United Nations Framework Convention on Climate Change (1992), on 12 December 2015 the text of the Paris Agreement on climate change was agreed and adopted (“the Paris Agreement”). The Paris Agreement set out certain obligations to reduce emissions of greenhouse gases with the object of seeking to reduce the rate of increase in global warming and to contain such increase to well below 2°C above, and if possible to 1.5°C, above pre-industrial levels. On 17 November 2016 the UK ratified the Paris Agreement. The obligations arising from the Paris Agreement directed to reduction of greenhouse gas emissions operate at a national level by reference to “nationally determined contributions”: see the summary in *R (Friends of the Earth) v Secretary of State for Transport* [2020] UKSC 52; [2021] PTSR 190 (“*Friends of the Earth*”), paras 70-71. It is through the national target and budgeting mechanisms set out in the Climate Change Act 2008 that the UK seeks to comply with its obligations under the Paris Agreement: see *Friends of the Earth*, paras 71 and 122-124.

243. In the EU, the Effort Sharing Regulation (EU) 2018/842 adopted in 2018 and revised in 2023 established for each Member State a national target for the reduction of greenhouse gas emissions by 2030 in specified sectors, including domestic transport. The same approach based on national targets had been adopted prior to the promulgation of the 2014 Directive and was referred to in the 2013 Guidance (p 20). On

13 February 2009 the EU Council issued a set of conclusions (17271/1/08) from a Council meeting in December 2008, Part III of which addressed an agreement reached in relation to “energy and climate change” regarding national reduction targets. Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community’s greenhouse gas emission reduction commitments up to 2020 laid down the minimum contributions of Member States to meeting those commitments “and rules on making these contributions and for the evaluation thereof” (article 1). The Decision provided for annual national emission allocations (see recitals (8)-(9) and article 3). The package of measures introduced at this time, and in place when the 2014 Directive was promulgated, set out what were known as “the 20-20-20 targets”, including by 2020 to reduce by 20% the emissions of greenhouse gases compared to 1990 levels.

244. The Petroleum Act 1998 is the primary legislation under which oil and gas extraction is regulated in the UK through the grant of licences by the Oil and Gas Authority (now called the North Sea Transition Authority). The revised Oil and Gas Authority Strategy (2021), issued pursuant to the 1998 Act, imposes a “central obligation” on relevant persons in the exercise of licensed activities to take the steps necessary to “(a) secure that the maximum value of economically recoverable petroleum is recovered from the strata beneath relevant UK waters; and, in doing so, (b) take appropriate steps to assist the Secretary of State in meeting the net zero target, including by reducing as far as reasonable in the circumstances greenhouse gas emissions from sources such as flaring and venting and power generation, and supporting carbon capture and storage projects”. There is no reference to responsibility in relation to scope 3 emissions.

245. In addition to these regimes, the Secretary of State operates the non-statutory Climate Compatibility Checkpoint (“the CC Checkpoint”), introduced in 2022 with the aim of ensuring the compatibility of future oil and gas licensing with the UK’s climate objectives and energy requirements. The CC Checkpoint includes tests regarding reduction of operational greenhouse gas emissions from the UK oil and gas production sector against targets agreed as part of the North Sea Transition Deal in 2021, benchmarking of such emissions from the sector against international benchmarks and assessment of the UK’s energy requirements. The Government consulted on the CC Checkpoint and the tests to be included and issued a response. The question of the inclusion of scope 3 greenhouse gas emissions in the CC Checkpoint tests was debated by consultees. In its response the Government explained why it decided against this:

“The inclusion of Scope 3 emissions was mentioned throughout the consultation questionnaire by stakeholders. Many stakeholders opposed the measurement of international Scope 3 emissions as part of the checkpoint, given the difficulties and complexities associated with accurate

measurement, existing consideration in the Carbon Budgets and Nationally Determined Contributions of consumers of UK-produced fuels, and the coverage of Scope 1 and Scope 2 emission reductions in other tests, which many responses suggested may be more relevant and controllable.

...

The government acknowledges that there are a range of methods for estimating scope 3 emissions and has reviewed the methods proposed. It is acknowledged that it would be possible to calculate an estimate, or range of estimates for UK scope 3 emissions. One approach would be to pick a calculation methodology that is already employed by the industry, another approach would be to produce a range of scope 3 estimates based on using a number of different approaches. However, given this information, it is not clear what action Ministers would take, as there is no agreed target for the reduction of scope 3 emissions.

...

... the government's view is that scope 3 emissions are not directly relevant to the decision on whether to endorse further licensing round[s]. Including any estimate of scope 3 emissions in the checkpoint would add little value, and it is not clear how Ministers would take such a number into account."

A key argument presented by some consultees why scope 3 emissions should not be included in the CC Checkpoint was that they "are covered by consuming nations' carbon accounts and therefore at a global level scope 3 emissions will be reduced through widespread demand reduction as sources of alternative energy come online"; the Government agreed with this submission (Designing a Climate Compatibility Checkpoint for Future Oil and Gas Licensing in the UK Continental Shelf: Government Response to the consultation (2022), pp 27-28).

246. Chapter 17 of the NPPF published in February 2019 is entitled "Facilitating the sustainable use of minerals". Para 205 provides that when determining planning applications, "great weight should be given to the benefits of mineral extraction, including to the economy", and planning authorities should, among other things, "ensure that there are no unacceptable adverse impacts on the natural and historic environment, human health or aviation safety, and take into account the cumulative

effect of multiple impacts from individual sites and/or from a number of sites in a locality”.

247. Chapter 14 of the NPPF addresses "the challenge of climate change". It states in general terms that the planning system should support the transition to a low carbon future. It should help to shape places in ways that contribute to radical reductions in greenhouse gas emissions and support renewable and low carbon energy infrastructure: para 148. New development should be planned for in ways that "can help to reduce greenhouse gas emissions, such as through its location, orientation and design": para 150.

248. Para 183 of the NPPF provides:

“The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.”

249. Para 12 of the Minerals section of the nPPG states that the planning and other regulatory regimes are “separate but complementary”, with the former focusing on whether new development would be appropriate for the location proposed. It concludes:

“... the focus of the planning system should be on whether the development itself is an acceptable use of the land, and the impacts of those uses, rather than any control processes, health and safety issues or emissions themselves where these are subject to approval under regimes. Mineral planning authorities should assume that these non-planning regimes will operate effectively.”

250. Para 112 of the Minerals section of the nPPG addresses the issue of what hydrocarbon issues can be left by mineral planning authorities to other regulatory regimes. In relevant part it states:

“Some issues may be covered by other regulatory regimes but may be relevant to mineral planning authorities in specific

circumstances. For example, the Environment Agency has responsibility for ensuring that risk to groundwater is appropriately identified and mitigated. Where an Environmental Statement is required, mineral planning authorities can and do play a role in preventing pollution of the water environment from hydrocarbon extraction, principally through controlling the methods of site construction and operation, robustness of storage facilities, and in tackling surface water drainage issues.

There exist a number of issues which are covered by other regulatory regimes and mineral planning authorities should assume that these regimes will operate effectively. Whilst these issues may be put before mineral planning authorities, they should not need to carry out their own assessment as they can rely on the assessment of other regulatory bodies. However, before granting planning permission they will need to be satisfied that these issues can or will be adequately addressed by taking the advice from the relevant regulatory body...”

Analysis

(1) The purpose and scheme of the EIA Directive (as amended by the 2014 Directive)

251. The basic purpose of the EIA Directive is to ensure that relevant environmental issues in respect of a project are identified and taken into account in the procedure for the grant of planning consent for the project, in particular with a view to examining whether environmental impacts can be avoided or mitigated by measures taken in designing the project or by the imposition and then monitoring of conditions attached to such consent. The EIA Directive lays down harmonised rules and procedures with a view to ensuring that a common approach is adopted across all Member States.

252. The EIA Directive contemplates that decisions on the grant of planning consent will often be taken by local or regional authorities, rather than national authorities: see article 2(2) and the review in the 2012 Impact Assessment (paras 234-235 above). The procedures and rules laid down in the Directive are intended to be appropriate for decision-making at local or regional level by such authorities.

253. This is an important point. As explained above, scope 3 or downstream greenhouse gas emissions are addressed by central governments at the level of national

policy. That is the general position for all Member States, and the UK. Decisions regarding the distribution of greenhouse gas emissions between different sectors of the economy, the striking of a balance between promotion of national economic objectives and reduction of greenhouse gas emissions in various sectors and the rate of transition sector by sector towards the achievement of the 2050 net zero target are all matters of national policy to be determined by central Government.

254. The same is true for debates with other states regarding the methodology for accounting for scope 3 greenhouse gas emissions, where these emissions may well occur in states other than the state where emissions which are closely associated with an originator activity arise (such as scope 1 and, typically, scope 2 emissions). For example, oil extracted at the Site may be transported to be refined in another state, and the fuel so produced may be transported to be used by motor vehicles in other states. Which states should have responsibility pursuant to the Paris Agreement and other international initiatives for accounting in terms of their national carbon figures for greenhouse gas emissions arising from the production chain running from extraction of minerals through refinement (in this case) or the manufacture of products, to the end use of the refined fuel or manufactured products, and the methodology to be used to identify and allocate such emissions, are matters for international discussion and agreement between states.

255. These are all “big picture” issues which a local planning authority such as the Council is simply not in a position to address in any sensible way.

256. Further, it would be constitutionally inappropriate for a local planning authority to assume practical decision-making authority based on its own views regarding scope 3 or downstream emissions and how these should be addressed in a manner which would potentially be in conflict with central Government decision-making and its ability to set national policy. This is true in relation to the UK and in relation to EU Member States as a whole, especially in light of the international and EU frameworks set out above according to which carbon budgets and carbon reduction policies are set at the national level. The EIA Directive as amended by the 2014 Directive was not intended to cut across this basic decision-making architecture in relation to meeting the challenge of climate change.

257. The information to be provided in the EIA process pursuant to the EIA Directive is intended to inform the decision whether to grant development consent for a project, and if so on what conditions, in a way that enables the decision-making authority - typically a local authority - to engage in practical decision-making within the remit of its own competence under existing procedures for development consent (see article 2(2) of the EIA Directive, para 220 above). In doing that it should decide whether a particular project is in accordance with national policy (for which purpose the NPPF and nPPG have been promulgated by the central Government) and consider whether

there are appropriate adjustments which can be made to the project to mitigate its environmental impacts, including to reduce the direct and indirect greenhouse gas emissions associated with it. The EIA process is intended to furnish information to enable the planning authority to exercise its judgment about such matters, not to create some general databank about possible downstream or scope 3 effects which could not bear on what the planning authority has to do. As was observed in the judgment of the CJEU in *Brussels Hoofdstedelijk Gewest v Vlaams Gewest* (Case C-275/09) [2011] Env LR 26 (“*Brussels Airport*”) at para 25, article 2(1) of the 1985 Directive (now in the EIA Directive) “does not ... require that any project likely to have a significant effect on the environment be made subject to the environmental impact assessment provided for in that Directive, but only those referred to in Annexes I and II to that Directive”.

258. The fact that the EIA Directive is directed towards regulating practical decision-making in this way is generally apparent from the scheme of the Directive and the exercise of judgment by a planning authority which it contemplates, and is also clear from recital (22) (para 216 above) which explains that the Directive does not apply in relation to specific acts of national legislation because the objective of supplying information relevant to the decision is “achieved through the legislative process”. It is no part of the object of the EIA Directive to generate information which does not have a direct and practical bearing on the matters to be decided by the decision-making authority. It is difficult to see what, in practical terms, a local planning authority is supposed to do with general information about downstream or scope 3 emissions other than to say that in its opinion they are so great that the project ought not to proceed at all and to refuse planning consent on that basis. But that would constitute unjustified disruption of the proper decision-making hierarchy contemplated by the EIA Directive, since in effect it would involve the local planning authority second guessing or supplanting the decision-making authority of the national Government regarding the appropriate reaction to the existence of downstream or scope 3 greenhouse gas emissions.

259. Further, in promulgating the EIA Directive the EU institutions were obliged to comply with the principle of proportionality. Proportionality is a general principle of EU law: see T Tridimas, *The General Principles of EU Law*, 2nd ed (2006), chapters 3-5. As Tridimas points out (p 137) the principle permeates the whole of the EU legal system; and see Geiger, Khan and Kotzur (eds), *European Union Treaties: A Commentary* (2015), p 40: “The principle of proportionality is one of the general principles of Community law”. Article 5(1) of the Treaty on European Union provides (among other things) that the use of EU competences is governed by the principle of proportionality and article 5(4) states that under that principle the content and form of Union action shall not exceed what is necessary to achieve the objectives of the EU Treaties. The EIA Directive falls to be interpreted in the light of this principle. Also, recital (24) to the EIA Directive (para 216 above) states that, in accordance with the principle of proportionality set out in article 5 of the Treaty on European Union, the Directive does not go beyond what is necessary to achieve its objectives, that is, including in relation to the supply of information to assist in decision-making (see

recital (22), para 216 above). It would clearly impose disproportionate costs and burdens on both developers and national authorities if information about all downstream or scope 3 greenhouse gas emissions had to be gathered and presented by developers and had to be assessed by planning authorities (in particular, at the local level) in circumstances where such information could not inform in any helpful or appropriate way the decisions to be taken by those authorities.

260. Accordingly, application of the principle of proportionality indicates that the appellant's proposed interpretation of the EIA Directive, arguing that all downstream or scope 3 emissions are to be regarded as "indirect effects of a project", is not correct. In fact, quite apart from the existence of the background principle of proportionality, in putting forward its 2012 Proposal for the amendment of the EIA Directive to take account of climate change issues the Commission positively asserted that the proposed amendments complied with the principle of proportionality, taking account of the burdens on developers and planning authorities: para 235 above. That statement was made in the context of amendments to the EIA process intended to ensure that greenhouse gas emissions closely associated with a project were taken into account in order to enable planning authorities to require mitigating measures to be taken in relation to matters such as the design of the project. It indicates that there was no intention for all downstream or scope 3 emissions to be taken into account in the EIA process, since information about that could have no proper bearing on actions to be taken by local planning authorities.

261. In addition to this, the general scheme of the EIA Directive indicates that the entirety of scope 3 or downstream greenhouse gas emissions do not qualify as "indirect effects of a project" within the meaning of the Directive. Oil extracted from the Site will have to be refined before it is used. Construction of a refinery would constitute a project listed within Annex I to the EIA Directive (at point 1: para 230 above) for which an EIA would be required. Greenhouse gas emissions from the construction and operation of such a refinery would have to be assessed in the context of an EIA for that project. It would be disproportionate for them to have to be assessed twice, once in the context of an EIA for that project and also in the context of an EIA for the Site.

262. Also, to construe the EIA Directive as requiring this would lead to incoherence. The decision-making processes by authorities deciding on each separate project are not integrated, and so would have a tendency to cut across each other on a potentially determinative issue as is alleged to arise here if each authority made its own assessment of the extent and significance of the same set of greenhouse gas emissions for the project on which it had to decide; all the more so where the projects might be in different Member States. The authority carrying out an EIA in relation to the refinery project, which clearly has the authority under the EIA Directive to determine such matters, might decide that the direct and indirect greenhouse gas emissions of the refinery could be limited or mitigated in an acceptable way (including by having regard to whatever national policy was applicable in that Member State). But the authority

carrying out an EIA in relation to the oil well might reach different conclusions about that (and might not give weight to the national policy of the different Member State of the refinery). The EIA Directive has no mechanism for resolving this sort of difference of view, nor for allocating decision-making authority in relation to such matters, other than by maintaining a focus on the particular project in question and greenhouse gas emissions associated with that project.

263. On the other hand, the relevant refinery might already exist, so that no EIA obligation arises in relation to it under the EIA Directive. In such a case it is difficult to see why the EIA in relation to the oil well should extend to cover the greenhouse gas emissions associated with the operation of a refinery which is not subject to the EIA regime. It would be odd to construe the Directive as imposing indirectly, by the back door, an obligation on the authority considering an EIA for the oil well project (ie a different project, possibly in a different Member State) to assess the greenhouse gas emissions of a refinery outside the regime altogether as part of that authority's EIA responsibilities in respect of the oil well project.

264. Further, if the refinery in this example were located outside the EU, to construe the EIA Directive as requiring the local authority carrying out an EIA in relation to the oil well to assess the downstream greenhouse gas emissions of the refinery in a third state with a view to (possibly) reaching a decision which would prevent the construction of the oil well and so, to that extent, prevent the supply of oil to that refinery, would be to give the Directive exorbitant jurisdictional effect. That would potentially cut across the conduct of relations between the UK and the EU and its Member States with such third state at an international level in a way which cannot have been intended (at any rate without that being clearly indicated in the drafting of the EIA Directive, which is not the case). There is no indication of what methodology should be used in such an assessment exercise, which one would have expected to see spelled out in a harmonising instrument like the EIA Directive if this had been intended.

265. The international regime in place before the promulgation of the 2014 Directive relied on a different mechanism for addressing cross-border effects in terms of greenhouse gas emissions, namely a scheme of national emissions targets designed to encourage policies for reductions in emissions at the place of use of carbon-based products (that is, to effect a reduction in demand), rather than by producing restrictions of output on the supply side. If it had been intended that the EIA Directive should promote a different mechanism of control, one would have expected that to be explained in the various documents setting out the policy underlying the EIA Directive and to be imposed by express drafting in the EIA Directive itself, which is not the case. These points apply with equal force in relation to control of greenhouse gas emissions from motor vehicles and so forth in other Member States and in third states, which are still more remote from the production of crude oil at the oil well at the Site and the decision-making responsibility of the Council. They are the same reasons why the CC

Checkpoint was not drafted to include reference to scope 3 greenhouse gas emissions (see para 245 above).

266. In fact, the EIA Directive does include provisions regarding its cross-border operation. These are far more limited in their effect than the interpretation proposed by the appellant would suggest. This provides a further indication that such an interpretation is incorrect.

267. Recital (15) of the EIA Directive (para 227 above) refers to the desirability of strengthening EIA in a transboundary context, having regard to the UN Convention on Environmental Impact Assessment in a Transboundary Context (1991) (also called the Espoo Convention). Article 1(vii) of that Convention defines “impact” to mean “any effect caused by a proposed activity on the environment including human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures ...” and article 1(viii) defines “transboundary impact” to mean “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”. This excludes the impact of global warming (an impact of an exclusively global nature) and refers to effects caused by a proposed activity, and so does not cover downstream or scope 3 greenhouse gas emissions caused by other activities. Article 3 requires notification of a proposed activity “that is likely to cause a significant adverse transboundary impact” to the state which is affected, to allow consultation involving that state pursuant to article 5.

268. Article 7 of the EIA Directive (para 227 above) reflects the policy explained in recital (15). There is no adjustment in the EIA Directive in the definition of relevant effects of a project for the purposes of this provision. The inference is that none was required in order to align the operation of this part of the EIA Directive and the Espoo Convention because the full range of downstream or scope 3 greenhouse gas emissions is not covered by the concept of “indirect effects of a project” on which the EIA Directive is based. The information to be provided under article 7(1)(a) by way of notification to another Member State (“a description of the project, together with any available information on its possible transboundary impact”) is intended to be aligned with the requirements under the Espoo Convention, as is the provision pursuant to article 7(2) and (3) of the further information available for the purposes of public consultation under article 6 of the EIA Directive. Its focus is the effects of the project itself, not downstream effects. It is by virtue of that focus that a Member State subject to the obligation in article 7 is able to know which other Member States it is required to involve in its domestic consultation and decision-making procedure under article 2(2).

269. In addition, the appellant’s interpretation of the EIA Directive would again produce disproportionate effects in terms of the operation of that decision-making procedure, by requiring the involvement of every other Member State in relation to

projects associated with significant downstream greenhouse gas emissions. There is nothing in the practice of Member States of which the court has been made aware which suggests that any of them have done this. Nor is there any indication that the Commission, in its supervisory role under article 12 of the EIA Directive, has suggested that their failure to do so is in contravention of the requirements of the Directive.

270. The Commission's concern regarding the operation of the EIA Directive in relation to matters affecting climate change was directed elsewhere. As explained in the 2012 Impact Assessment (paras 233-234 above), prior to the promulgation of the 2014 Directive the general practice across all Member States was that there was no assessment at all of greenhouse gas emissions of projects, including those closely associated with a project. In the 2012 Impact Assessment and the 2013 Guidance, the Commission indicated that the indirect effects of a project should be taken to include greenhouse gas emissions such as those associated with increased power consumption at the project and increased motor vehicle transportation to and from the project (paras 235-236 above). The object of the 2014 Directive was to tighten up procedures across the EU to produce a harmonised approach which ensured that both "direct effects" of projects in terms of their own generation of greenhouse gas emissions and "indirect effects" in terms of greenhouse gas emissions associated with the project such as from any increased power consumption and motor transportation it would involve were taken into account in the EIA for a project, whereas they had been omitted previously (para 237 above).

271. As explained above, neither the 2012 Proposal nor the 2012 Impact Assessment proposed that the EIA Directive should be changed so that, for the first time, in contrast to existing Member State practice, all scope 3 or downstream greenhouse gas emissions should be included within the concept of "indirect effects of a project" and brought within the EIA regime. This would have been a major change in the operation of the EIA regime and, if it had been intended, this would have been stipulated in clear terms in the amendments to the EIA Directive brought about by the 2014 Directive. As *Holgate J* rightly pointed out (paras 5 and 6), the effects of the interpretation urged by the appellant would be profound across many areas, not limited to the extraction of oil, since, for instance, the production of aircraft would involve the manufacture of components in a number of factories, leading to the construction of an aircraft in another, and its eventual use for transportation, with greenhouse gas emissions produced at each stage. If it had been intended that the EIA for a factory project to produce components should include all the downstream emissions, this would have been set out clearly in the EIA Directive.

272. Further, if that had been intended, the 2014 amendments of the EIA Directive would have given clear guidance regarding the approach and methodology to be adopted in relation to the assessment of scope 3 or downstream impacts of a project. In the absence of such guidance, there would have been an obvious risk of capricious and arbitrary differences in approach and methodology arising as between local authorities

within a particular Member State and also across Member States on a basic point of principle. This would have undermined a fundamental objective of the EIA Directive, which was to promote a harmonised and consistent approach to the conduct of EIA for projects.

(2) The text of the EIA Directive

273. Against the background of this discussion of the purpose and scheme of the EIA Directive, the points in relation to its text can be made quite shortly. In my view, they indicate clearly that the “indirect effects of a project” do not extend to the downstream or scope 3 greenhouse gas emissions of the kind which are in issue in this case. The relevant provisions are set out at paras 211-231 above.

274. “Project” is defined in article 1(2)(a) to mean “execution of construction works ...” or “other interventions in the natural surroundings ...”. This definition focuses on a specific set of physical works. As the CJEU observed in *Abraham* at para 23, “[i]t is apparent from the very wording of [what was then article 1(2) of the 1985 Directive] that the term ‘project’ refers to works or physical interventions”; see also *Brussels Airport*, paras 20-24.

275. The relevant environmental effects, both direct and indirect, of a project for EIA purposes are those “of the project”. This is the formula used throughout the EIA Directive: see, for example, the Directive’s title, recital (7), article 1(1), article 1(2)(g)(iv), article 3(1), article 5(1)(b) and the tailpiece of article 5(1), article 5(3)(c), para 3 of Annex II, para 3 of Annex III, and the introduction and tailpiece of para 5 of Annex IV. Article 3(1) (para 221 above) is of particular importance, because this sets out the basic obligation regarding what the EIA of a project should achieve.

276. Holgate J and Sir Keith Lindblom rightly emphasised the importance of this formula. It is difficult to read it as based on an expansive “but for” approach to causation of effects, ie that it is sufficient to say that but for the production of crude oil at the Site, greenhouse gas emissions would be lower. Very few legal rules to do with causation of effects operate according to a pure “but for” principle, and there is no reason to interpret the EIA Directive in this way. On the contrary, the formula used in the Directive indicates that, even in relation to “indirect” environmental effects, they still have to be effects “of the project”. This imports the idea that the effects have to be relatively closely connected with the project and do not qualify if they are remote from it. On a natural reading of this phrase, downstream or scope 3 greenhouse gas emissions of the kind in issue in this case could not be said to be “of the project”. If it had been intended that they should be covered by the obligation in article 3(1), some wider formula would have been used. Furthermore, this interpretation allows for the coherent accommodation of the EIA regime under the EIA Directive and the general background

approach to combating climate change based on policies and targets established at the national level.

277. An EIA is required before development consent is given for projects “likely to have significant effects on the environment by virtue, *inter alia*, of their nature, size or location”: article 2(1). The focus is on the impact of the project itself. An EIA is to be made part of existing development consent procedures, which are usually conducted by local authorities: article 2(2) and paras 220 and 235 above. There is to be consultation involving the public before development consent is given (article 6). The obligation under article 6 is to consult “the public concerned”, which is defined in article 1(2)(e) to mean “the public affected or likely to be affected by, or having an interest in, the environmental decision-making procedures referred to in article 2(2) ...”. The focus is again on the impacts which the project itself has on the environment which may affect people in the locality, who should be given the opportunity to participate in the local decision-making procedure. There is no suggestion that the population of the whole world, who are affected by global climate change, qualify as “the public concerned” for these purposes.

278. An EIA of a project is required to take account of possible environmental effects deriving from the vulnerability “of the project” to risks of major accidents or disasters “that are relevant to the project concerned”: article 3(2). The focus is on the effects which may be produced by the project itself, if affected by an accident or environmental disaster.

279. An EIA may be integrated into existing procedures for development consent: article 2(2) and recital (6). As explained above, the EIA Directive contemplates that an EIA will be carried out by local authorities which have responsibility for granting development consent, and an EIA is directed to furnishing such bodies with information relevant to their own decision-making functions and in relation to matters over which they have practical control. Such local bodies are not responsible for national climate policy, do not have the legitimacy or authority to second-guess assessments of national bodies in relation to it, do not have powers to impose their own judgments regarding national or global climate change policy, are not equipped to make the relevant judgments about how the national or global economy should adjust to climate change, and are not provided with coherent criteria to make assessments regarding downstream effects of projects (whether in relation to climate change, or in relation to other environmental impacts of other projects likely to follow on from adoption of a particular project).

280. The scheme of the EIA Directive is that some projects are taken to have significant effects on the environment and so are automatically subject to an EIA (Annex I projects) and others (Annex II projects) may be subject to an EIA when screened: recitals (7)-(9) and article 4(1) and (2). In the case of both Annex I and Annex

II, the focus is on the specific project. The basis for inclusion in Annex I is the size of the project and its likely physical impacts on the local area, not its likely emissions of greenhouse gases. The fact that fossil fuel refining and burning projects (eg points 1, 2(a) and 4(a)) are listed separately from fossil fuel extraction projects (points 14 and 19) reinforces the project-focused nature of the Directive. The same point applies in relation to the projects listed in Annex II as potentially requiring a screening opinion.

281. Article 4(3) introduces Annex III, which sets out the criteria to determine whether an Annex II project should be selected for an EIA. These criteria are the “characteristics of projects” (point 1), the “location of projects” (point 2) and the “type and characteristics of the potential impact [sc of projects]” (point 3). See also recitals (9)-(11). In setting out guidance for the selection for projects to be subject to an EIA, Annex III provides an indication as to the purpose and focus of the EIA Directive.

282. In Annex III, point 1, para (b) (“cumulation with other existing and/or approved projects”) is directed to identifying specific projects with a view to assessing their effects; it is not directed to identifying the cumulation of downstream greenhouse gas emissions from distinct projects or activities, such as motor transport, which do not constitute projects at all. Para (d) (“the production of waste”) and para (e) (“pollution and nuisances”) are listed as characteristics of the project itself. They are project-focused and do not refer to wider climate change effects. Para (f) (“risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change ...”) refers to climate change in the context of its contribution to environmental risk posed by the project itself. Annex III, point 2, focuses specifically on the sensitivity of the immediate location of the project (“the environmental sensitivity of geographical areas likely to be affected by projects ... with particular regard to” specific environmental features), not on general areas around the world affected by global climate change. Annex III, point 3, refers to “the likely significant effects of *projects* on the environment” in relation to the criteria in points 1 and 2, having “regard to the impact of *the project* on the factors specified in article 3(1), taking into account” a series of impacts referable to the project itself (emphasis added). These include “the transboundary nature of the impact” (para (c), which marries up with the point on transboundary effects under article 7 discussed above) and “the cumulation of the impact with the impact of other existing and/or approved projects” (para (g), which is focused on the cumulative effect of the project with specific existing and approved projects, and does not refer to cumulative effects of greenhouse gas emissions as a contributor to general climate change).

283. Article 4(4) introduces Annex IIA, which specifies the information a developer has to provide for screening of Annex II projects. This is all specific to the project itself and its immediate environment: a description of the project including the physical characteristics of the whole project and “a description of the location of the project, with particular regard to the environmental sensitivity of geographical areas likely to be affected” (not the impact on the whole planet from climate change) (point 1); “a

description of the aspects of the environment likely to be significantly affected by the project” (point 2); and “a description of any likely significant effects ... of the project on the environment resulting from” use of natural resources and “the expected residues and emissions and the production of waste” (point 3), meaning residues, emissions and waste from the project, not from other projects or activities.

284. Article 1(2)(g) defines what is meant by an EIA. Article 5 specifies how the first stage of it is to be conducted (corresponding to recitals (12)-(14)), and introduces Annex IV, which specifies the information to be set out in the developer’s EIA report (the “environmental statement”, as it is called in the EIA Regulations). Article 5(1) sets out a series of matters all focused on the project itself. As well as a description “of the project” (sub-para (a)) and “of the likely significant effects of the project on the environment” (sub-para (b)), these include “a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce ... likely significant adverse effects on the environment” (sub-para (c)), that is, to inform the relevant authority of steps taken in relation to the design of the project to reduce its effects; “a description of the reasonable alternatives studied by the developer” and an indication of the reasons for selecting the particular option chosen “taking into account the effects of the project on the environment” (sub-para (d)), that is, to inform the relevant authority of the reasoning process in relation to siting, design and so forth of the project to keep its effects on the environment to a minimum; and any additional information specified in Annex IV “relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected” (sub-para (f)), meaning by that particular project or type of project.

285. The significance of sub-paras (c) and (d), in particular, is that they refer to information which will allow the relevant authority to test in a practical way and in light of its own power of assessment for the purposes of giving development consent for the particular project or attaching conditions thereto, whether the project has been developed with a view to minimising its environmental impact and whether more could be done in terms of its siting or design to achieve that.

286. The purpose of the EIA process is to enable the relevant authority to make this assessment, to facilitate consultation relevant to that (articles 6 to 8), to enable the authority to give a reasoned conclusion to explain its actions (article 1(2)(g)(iv)) and then integrate that reasoned conclusion into the grant of development consent (article 1(2)(g)(v), read with article 8a), and to ensure enforcement of any minimisation measures (article 8a(1)(b) and (4)). The information required to be provided and assessed in an EIA is that directed to fulfilling that purpose.

287. Article 5(2) provides for a mechanism for the relevant authority to give guidance to the developer, taking into account the project-focused information already provided by it “on the specific characteristics of the project, including its location and technical

capacity, and its likely impact on the environment”, regarding any further detail required. The purpose of this part of the procedure is to enable the authority to ensure it is equipped with sufficient information to enable it to exercise its powers in relation to the grant of development consent in a practical way, not to acquire general information about the effect of greenhouse gas emissions on climate change, nor about downstream or scope 3 effects generally. Article 5(3)(c) stipulates that where necessary the authority shall seek supplementary information in accordance with Annex IV “which is directly relevant to reaching the reasoned conclusion on the significant effects of the project on the environment” (“the reasoned conclusion” is that required by article 1(2)(g)(iv) and article 8a(1)(a)). The object of this is so that the authority can seek information relevant to the exercise of its own powers in relation to granting development consent.

288. Annex IV, referred to in article 5(1), specifies the information to be provided by the developer. Its focus is the project itself. Point 1 requires a “description of the project, including in particular” various project-focused information including a description of its location (para (a)), the physical characteristics of the whole project (para (b)), a description of “the main characteristics of the operational phase of the project” including energy demand and natural resources used (para (c)), and “an estimate ... of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases” (para (d)), which refers to emissions of various types physically associated with the project itself, not to downstream or scope 3 greenhouse gas emissions.

289. Annex IV, point 2, requires a “description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) ... relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”. This information is directed to informing the planning authority about matters relevant to steps it can practically take in exercise of its own powers in relation to the grant of development consent in order to minimise the environmental impact of the project itself, eg by requiring improvement of its design to limit emissions (including its own greenhouse gas emissions) by filters, carbon capture and so on.

290. Annex IV, point 3, requires a description of “the relevant aspects of the current state of the environment” and how it is likely to evolve “without implementation of the project”, to provide a “baseline scenario”. The object of this is to allow the planning authority to make an assessment of the impact of the implementation of the project on the environment in which it is located, with a view to enabling it to exercise its own powers in relation to the grant of development consent.

291. Annex IV, point 4, requires a description of the factors specified in article 3(1) likely to be significantly affected by the project. Article 3(1) refers to “climate”, and has

done so since the 1985 Directive. The predecessor of point 4 in the 1985 Directive listed “climatic factors” among a range of other factors. This was somewhat expanded by amendment pursuant to the 2014 Directive to refer to “climate (for example greenhouse gas emissions, impacts relevant to adaptation)”, but this effect and the long list of other effects set out are project-focused and are only relevant if significantly affected “by the project”.

292. Annex IV, point 5, requires a description “of the likely significant effects of the project on the environment resulting from, inter alia” a list of project-focused matters: construction and existence of the project (para (a)); use of natural resources (that is, by the project) (para (b)); emission of pollutants, noise etc, the creation of nuisances, and the disposal and recovery of waste (para (c)), which does not include reference to downstream effects, for example on the climate; risks to human health, cultural heritage “or the environment (for example due to accidents or disasters)”, that is, from accidents or disasters affecting the project itself which lead to impacts on the environment (para (d)), which does not include reference to downstream effects; “the cumulation of effects with other existing and/or approved projects ...” (para (e)), which, like Annex III, point 3(g), is focused on the cumulative effect of the project with specific existing and approved projects, and does not refer to cumulative effects of greenhouse gases in relation to general climate change; “the impact *of the project* on climate (for example the nature and magnitude of greenhouse gas emissions [sc from the project]) and the vulnerability *of the project* to climate change’ (para (f), emphasis added); and “the technologies and the substances used [sc in the project]” (para (g)). The tailpiece of point 5 (para 225 above) refers to the effects “of the project”.

293. Annex IV, point 7, requires a description “of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements ...”. The object of this is to equip the planning authority with information relevant to the exercise of its powers, so as to ensure that the effects of the project itself on the environment are minimised.

294. Article 7(1) provides for enhanced, cross-border consultation where a Member State “is aware that a project is likely to have significant effects on the environment in another Member State”, as explained above. The focus is on the environmental effects of the project itself, not downstream effects.

295. Articles 12 and 13 of the EIA Directive make provision for oversight of the EIA regime by the Commission. Their predecessors were articles 11 and 12 of the 1985 Directive. There is no indication in the materials before the court that the Commission has at any stage regarded the absence of assessment by planning authorities in Member States of downstream or scope 3 greenhouse gas emissions in relation to the grant of development consent for projects as involving infraction of the 1985 Directive or the

EIA Directive. Nor is there any jurisprudence of the CJEU which indicates that the “indirect effects of a project” include downstream or scope 3 greenhouse gas emissions. Given the long period of time involved since the promulgation of the 1985 Directive, the EIA Directive and the 2014 Directive, the absence of such indications seems to me to be significant.

(3) Relevant case law

296. There is limited assistance to be derived from the jurisprudence of the CJEU and domestic caselaw. No judgment of the CJEU addresses the question whether scope 3 or downstream greenhouse gas emissions of the kind at issue in the present case qualify as “indirect effects of a project” within the meaning of the EIA Directive. The question has to be addressed primarily by analysis of the purpose, scheme and text of the EIA Directive itself, as set out above.

297. In England and Wales, the leading decisions on this issue are those of *Holgate J* and the Court of Appeal in the present proceedings. In Scotland, the Court of Session (Inner House) in *Greenpeace Ltd v Advocate General* [2021] CSIH 53; 2021 SLT 1303 (“*Greenpeace*”) followed and applied the analysis of *Holgate J* in the present case. Little assistance can be derived from other domestic authorities.

298. In *An Taisce – The National Trust for Ireland v An Bord Pleanála (Kilkenny Cheese Ltd, Notice Party)* [2022] IESC 8; [2022] 2 IR 173 (“*Kilkenny Cheese*”) the Supreme Court of Ireland examined in detail the issue whether an EIA pursuant to the EIA Directive of a project involving the construction and operation of a large cheese factory should include assessment of upstream greenhouse gas emissions in relation to the project. Upstream emissions to which an activity gives rise qualify as scope 3 emissions within the scheme of the GHG Protocol. The Supreme Court endorsed the reasoning of *Holgate J* in the present case and concluded that assessment of those emissions was not required by the EIA Directive. The Council, the Secretary of State and HHDL seek to rely on *Kilkenny Cheese* as persuasive authority on the proper interpretation of the EIA Directive. The appellant seeks to rely on certain other authorities.

(a) EU caselaw

299. The appellant relies in particular on *Abraham*, para 210 above, which concerned the application of the 1985 Directive in the context of a project to expand an airport for commercial use. The claimants, who lived nearby, objected to the development on grounds of noise pollution. In the relevant part of its judgment (paras 41-46), the CJEU held that the competent authorities had “to take account of the projected increase in the activity of an airport when examining the environmental effect of modifications made to

its infrastructure with a view to accommodating that increase in activity” when screening the project to see whether an EIA was required. The CJEU observed (para 42) that the scope of the 1985 Directive “is wide and its purpose very broad”, and held (para 43) that it would be contrary to that approach to take account only of the direct effects of the works themselves, “and not of the environmental impact liable to result from the use and exploitation of the end product of those works” (that is, the increased infrastructure of the airport).

300. At point 31 of the opinion of Advocate General Kokott, she said “[t]he rules on the information to be provided by the developer under article 5(1) of the [1985] Directive show that the notion of indirect effects is to be construed broadly and in particular includes the effects of the operation of a project”. At point 33 she said that “[i]n the case of an airport, the type and extent of the proposed air traffic and the resulting effects on the environment are relevant. The developer can also as a rule be expected to provide that information.”

301. Therefore, the indirect environmental effects of the increase in activity which the CJEU and the Advocate General identified as relevant in this case were closely connected to the project in issue. The judgment does not support the appellant’s claim in the present case that downstream or scope 3 greenhouse gas emissions which are remote from the operation of the project itself are properly to be regarded as “indirect ... effects of the project” within the meaning of article 3(1) of the EIA Directive. It is consistent with the interpretation of the EIA Directive set out above that the indirect environmental effects of a project include increased greenhouse gas emissions in connection with the activities carried out in association with it after its construction as an addition to the direct environmental effects of the project itself. The careful language used by the CJEU in the judgment is not compatible with adoption of a simple “but for” test in relation to any environmental effects of a project however far removed downstream or upstream they might be. See also the judgment in *Ecologistas*, para 210 above, at paras 39-42.

302. Reference should also be made to *Brussels Airport*, para 257 above, in which *Abraham* was considered. The focus of *Abraham* was again taken to be on the indirect environmental effects closely associated with the operation of the airport. Advocate General Mengozzi said (point 30) that in the case of an airport project “the obligation to carry out an impact assessment will be triggered, and not only the immediate effects of the construction works, but also the indirect effects which may be caused to the environment due to the subsequent activity carried on at the airport, will have to be examined”. He also observed (point 28) that “[even] though it is settled case law that the scope of [the 1985 Directive] is rather broad, a purposive interpretation of [the word ‘construction’ in Annex I] cannot disregard the clearly expressed intention of the legislator”. At para 29 of the judgment the CJEU expressly approved point 28 of the Advocate General’s opinion.

(b) UK caselaw

303. The principal domestic authority relied on by the appellant in this court is *Squire*, para 210 above. That concerned an application for planning permission to erect extensive buildings for rearing poultry, for which an EIA was required. A neighbour objected to this development on the grounds that the storage and spreading of manure from it would result in odour and dust. The environmental statement submitted by the developer simply relied on the fact that a permit for these operations would be required in due course from the Environment Agency, and did not include an assessment of the direct and indirect effects of the development in this regard. The grant of planning permission on the basis of this limited form of environmental statement was quashed by the Court of Appeal. The EIA by the local planning authority was deficient because it did not examine the environmental impacts of the storage and spreading of manure both on-site and off-site as an indirect effect of the proposed development. Lindblom LJ, giving the lead judgment for the court, referred in particular to *Abraham*. The environmental statement indicated that manure would be produced in such quantity that off-site disposal would be required (paras 64-65). It did not set out any meaningful assessment of the effects of odour and dust from its disposal on-site and off-site (para 66); nor assess the measures by which those harmful effects might be reduced (para 67). There had been no proper EIA in relation to the effects of the poultry manure which would be generated by the operation of the development (para 73).

304. In my view, *Squire* does not assist the appellant in her argument in the present proceedings. As in *Abraham*, the indirect environmental effects from the disposal of manure were closely connected with the operation of the project in issue. Like *Abraham*, *Squire* does not support the appellant's claim in the present case that downstream or scope 3 greenhouse gas emissions which are remote from the operation of the project itself are properly to be regarded as "indirect effects of the project" within the meaning of article 3(1) of the EIA Directive. Holgate J was right to distinguish it (paras 119-120), as was Sir Keith Lindblom, the Senior President of Tribunals (as Lindblom LJ had become), in the Court of Appeal (paras 48-49). As Sir Keith Lindblom pointed out (para 48), "[t]he production of manure and its storage and spreading, with the concomitant impacts of odour and dust, was clearly an outcome of the proposed development itself and its use"; and "[t]he Court of Appeal [that is, in his own lead judgment in *Squire*] did not take itself to be explicating the general meaning of the term 'indirect significant effects'".

(c) *Kilkenny Cheese*

305. In *Kilkenny Cheese*, in the judgment of Hogan J with which the other members of the court agreed, the Supreme Court of Ireland addressed the interpretation of the EIA Directive, among other issues. The relevant question under the EIA Directive was whether the obligation on the respondent Board to assess the indirect environmental

impacts of the proposed cheese factory under article 2(1) of the EIA Directive included an assessment of the indirect environmental impact of the off-site production of milk which would be needed to supply the factory (para 17(a) of the judgment). This issue related to environmental effects upstream from the project subject to an EIA, in that the factory was so large that it was assessed that, by reason of the substantial increase in demand for milk which it would create, it would lead to a significant increase in the number of cattle kept on farms in Ireland. Those cattle would have a detrimental impact on the environment, including by substantial production of greenhouse gases.

306. A preliminary question for the court was whether there was in fact a causal relationship between the factory and enhanced milk production (para 53). While the court accepted that “the factory will not *in and of itself* create a demand for milk” (para 75, emphasis in original), because it could absorb existing production levels of milk, the court concluded on the evidence that “the existence of the factory is likely to reinforce and strengthen overall demand for milk” well above the demand which would exist if the factory were not constructed (paras 77-78). Accordingly, the court’s analysis proceeded on the footing that there would be a significant increase in the number of cattle upstream from the project in order to meet the enhanced demand for milk associated with the project.

307. It was necessary first to determine the scope of the “project” which was required to be subject to the EIA, by reference to the definition of a “project” in article 1(2)(a) of the EIA Directive (para 81). It was accepted that off-site milk production was not part of the project itself, so the Supreme Court had to ask what the words “direct and indirect significant effects of a project” in article 3(1) of the Directive meant, since they determined what was required to be assessed in the context of the project involving the operation of the cheese factory (para 86). There were two possibilities: that the phrase had an open-ended meaning in relation to indirect effects of a project to cover any effects associated with the project, or that the indirect effects must be those which the development itself has on the environment. After an extended discussion, the court concluded that the latter interpretation was correct. Therefore, the EIA in relation to the factory project was not required to assess the upstream environmental impacts associated with the increased off-site production of milk.

308. The Supreme Court reasoned that the difficulty with an open-ended interpretation of article 3(1) is that it places no limits on the range of indirect effects that would have to be assessed for EIA purposes (para 93). This cannot have been intended. The court cited with approval (paras 94-100) Holgate J’s analysis on this issue in the present case and endorsed (paras 96 and 100) the “legal test” set out by him, namely that the indirect effects of a project must be effects which the project itself has on the environment (paras 101 and 112 of Holgate J’s judgment). The Supreme Court entered one caveat (para 102), namely that there may “be special and unusual cases where the causal connection between certain off-site activities and the operation and construction of the

project itself is demonstrably strong and unbreakable” such that the significant indirect environmental effects of those activities would be required to be subject to an EIA.

309. By this qualification, the Supreme Court was able to integrate into its analysis the decisions in the previous Irish cases of *An Taisce – National Trust for Ireland v An Bord Pleanála (Edenderry Power Ltd, Notice Party)* [2015] IEHC 633 (the environmental effects of extraction of peat for use in a thermal power plant had to be assessed in the EIA for the power plant project as indirect effects of that project within the meaning of article 3(1) of the EIA Directive) and *O Grianna v An Bord Pleanála* [2014] IEHC 632 (the connection of a wind turbine development with the national grid was fundamental to the project so that the cumulative effect of both should be assessed). In the *Edenderry* case, the judge held (para 66) that what could count as an indirect effect of a project was subject to a remoteness test, which was satisfied on the particular facts of the case, and the Supreme Court endorsed this analysis: paras 88-91. (I interpose that this indirect effect could be regarded as analogous to the inclusion of greenhouse gas emissions “caused by any supporting activities or infrastructure that is directly linked to the implementation of the proposed project” within the concept of “indirect effects of a project” as indicated by the Commission in the 2013 Guidance: para 236 above). By contrast, the environmental effects of an increase in cattle population were too remote from the cheese factory project to qualify as “indirect effects” of that project.

310. The Supreme Court justified its conclusion as follows: (i) the alternative open-ended interpretation of article 3(1) would mean that there were “hardly any limits but the sky” regarding the extent of indirect effects of a project which had to be brought into account in the EIA for that project (paras 100 and 104-105), which would be incompatible with coherent decision-making by the relevant planning authorities by reference to determinate factors; (ii) the language of article 5(1) and in Annex IV, point 1, para (c) “strongly suggest[s] that the information to be supplied must be firmly tethered to the project itself, so that the indirect significant effects to be assessed must be intrinsic to the construction and operation of the project” (para 106); and (iii) the EIA Directive “was ultimately designed to assist in identifying and assessing the direct and indirect significant environmental effects of a specific project, including (post-2014) the climate change effects of such a project”, and its scope “should not be artificially expanded beyond this remit” and it should not “be conscripted into the general fight against climate change by being made to do the work of other legislative measures ...” (para 107).

311. Those measures included the Irish Climate Action and Low Carbon Development (Amendment) Act 2021 which, like the UK’s Climate Change Act 2008, sets out the Irish Government’s commitment at a national level to achieve the goal of carbon-neutrality by 2050. The Supreme Court pointed out that the wider indirect environmental consequences of milk production and the activities of the dairy sector should be the subject of national or sectoral measures, rather than being considered at the local level in relation to a decision on planning permission (para 107).

312. The Supreme Court’s analysis regarding the interpretation of the EIA Directive is closely aligned with that set out above. I agree with it. The Supreme Court considered that its interpretation of the EIA Directive was *acte clair* and therefore no reference to the CJEU was required: paras 155-157. The Commission has not brought infraction proceedings against Ireland for adopting that interpretation, which indicates that the EU institutions do not consider the Supreme Court was wrong.

(d) Other authorities

313. The appellant referred to several cases in other jurisdictions which concerned projects for extraction of hydrocarbons: *Vereniging Milieudefensie v Royal Dutch Shell Plc* (Case No C/09/571932) 26 May 2021 (decision of the Hague District Court); *Nature and Youth Norway v The State of Norway (represented by the Ministry of Petroleum and Energy)*, decision of the Norwegian Supreme Court, 22 December 2020, HR-2020-2472-P (Case No 20-051052SIV-HRET); *Gray v Minister for Planning* [2006] NSWLEC 720; (2006) 152 LGERA 258 (decision of the New South Wales Land and Environment Court); *Gloucester Resources Ltd v Minister for Planning* [2019] NSWLEC 7; (2019) 234 LGERA 257 (decision of the New South Wales Land and Environment Court); and, from the USA, *WildEarth Guardians v Zinke* 368 F Supp 3d 41, 73 (DDC 2019) (decision of the Federal District Court for the District of Columbia). The legal regimes applicable in these cases were different from the EIA Directive. As Sir Keith Lindblom pointed out in the Court of Appeal (paras 72-78), none of these authorities has any direct bearing on the legal issues in the present case, which are primarily concerned with the proper interpretation of the EIA Directive. It is not necessary to lengthen this judgment by referring to them in detail.

314. After the hearing, the appellant sent to the court a first instance authority from Norway: *Greenpeace Nordic v The State of Norway (represented by the Ministry of Petroleum and Energy)* (Case No 23-099330TVI-TOSL/05), judgment of the Oslo District Court of 18 January 2024. A similar comment applies. That case considered challenges to the grant of oil production licences for North Sea oil fields where there had not been an assessment of the downstream greenhouse gas emissions which would be produced by combustion of the oil extracted from those fields. The challenges were based on a number of legal regimes, including Norwegian statute law, the EIA Directive as applied in Norwegian law pursuant to the European Free Trade Agreement to which Norway is party, the European Convention on Human Rights and the Norwegian Constitution. The District Court held that the grant of the licences was invalid by reason of the omission of an assessment of the downstream emissions, relying primarily on Norwegian statute law as interpreted in light of the Norwegian Constitution. It then turned to consider the EIA Directive. As an addition, in part of its reasoning which was not critical for its decision, the District Court held that there had been a breach of the EIA Directive. The District Court was referred to the judgment of the Court of Appeal in the present case but declined to analyse it because “a comparative analysis of other countries’ domestic law ... has limited significance” (p 50 of the official translation).

We have been informed that the District Court's decision is now under appeal to the Norwegian Supreme Court.

315. With all due respect, I do not consider that the judgment of the District Court can be regarded as a persuasive authority. The reasoning is relatively short. The judge did not attempt to face up to the analysis set out by Holgate J and the Court of Appeal. She did not refer at all to the judgment of the Irish Supreme Court in *Kilkenny Cheese*, nor to the judgment of the Inner House of the Court of Session in *Greenpeace*. In my view the judge placed undue weight on the words “indirect significant effects” in article 3(1) read outside the context of the scheme of the EIA Directive and without regard to its drafting history. She seems to have assumed that simply by use of the word “indirect” the downstream emissions at issue were within the ambit of that provision, without considering the purpose and scheme of the EIA Directive in the detail in which they have been examined in these proceedings and in those other cases. The judge wrongly considered that *Abraham* supported her view (pp 49-50 of the official translation; contrast paras 299-301 above); she did not refer to *Brussels Airport*, which provides guidance regarding the proper interpretation of *Abraham* (see para 302 above); and she misquoted the judgment in *Abraham* at para 43 as referring to possible effects “from the use and exploitation of the end product” (which, in a case involving a project to extract oil, suggests a reference to the oil). In fact, in that passage the CJEU said only that it would be contrary to the purpose and scope of the 1985 Directive “to take account, when assessing the environmental impact of a project or its modification, only of the direct effects of the works envisaged themselves, and not of the environmental impact liable to result from the use and exploitation of the end product of those works” (emphasis added), meaning the physical works involved in the project itself (in that case, the building of an extended airport runway).

(4) The approach of Moylan LJ in the Court of Appeal

316. As noted above, Moylan LJ in his dissenting judgment in the Court of Appeal placed particular emphasis on point 14 in Annex I (para 210 above). With respect, I do not consider that this provision can bear the weight he places on it.

317. The provision was not included in Annex I to the 1985 Directive. It first appeared in Directive 97/11, which was the first Directive amending the 1985 Directive, in part to bring it into line with the Espoo Convention. In fact the Espoo Convention, in its original version, did not include this text. Instead, point 15 of Appendix I to the Convention referred to “Offshore hydrocarbon production”. Directive 97/11 introduced significant revisions to Annex I to the 1985 Directive, including Annex I, point 14. Recital (6) of Directive 97/11 introduced the revisions in very broad terms, simply stating that “... it is appropriate to make additions to the list of projects which have significant effects on the environment and which must on that account as a rule be made subject to systematic assessment”.

318. The Aarhus Convention was adopted in June 1998, after the promulgation of Directive 97/11. The Annex to the Aarhus Convention copied the revised form of Annex I to the 1985 Directive, including the text at point 14. Later, with effect from 2017, the Espoo Convention copied that Annex as well.

319. This history is significant. There was no indication when the text of Annex I, point 14 was adopted that it was intended to extend the concept of “indirect ... effects of a project” in article 3(1) of the 1985 Directive to cover scope 3 or downstream greenhouse gas emissions. Neither the Commission nor any Member State considered that it had that effect: see the discussion in the 2012 Impact Assessment and the 2013 Guidance (paras 233-236 above). Nor was it considered to have that effect in the Aarhus Convention (para 239 above). It was not a revision brought in by the 2014 Directive to address the issue of climate change.

320. Further, when one looks at Annex I, point 14 in the context of Annex I and the EIA Directive as a whole, there is no good reason to interpret it as being concerned with scope 3 or downstream greenhouse gas emissions. No other item in the list of Annex I projects for which an EIA is mandatory are singled out for such treatment on the basis of their downstream environmental effects, even though several of them are likely to be associated with such effects (eg point 1, crude-oil refineries; point 6, chemicals production; points 7 and 8, construction of certain roads, railways, waterways and ports; point 19, quarries and open-cast mining). Rather, where in Annex I projects are identified by reference to the volume of production, as in point 14, the reason is that this indicates that they are construction projects of such a substantial size as to warrant a mandatory EIA without the need for a screening opinion. The reference in point 14 to the relevant volume of production being for commercial purposes seems to me to be included simply in order to emphasise this, as that is likely to affect the extent of the construction involved by comparison to, say, a project for experimental drilling which might meet that volume level but only for a short period.

(5) The approach of the majority in the Court of Appeal

321. As noted above, the majority in the Court of Appeal considered that Holgate J was wrong to conclude that the answer to the question of the proper application of the EIA Directive could be determined as a matter of law by reference to the terms of the Directive. Instead, in their view, it was a matter for the evaluative assessment of the Council as local planning authority, subject to the requirement of *Wednesbury* rationality, whether the downstream environmental effects from the combustion of refined hydrocarbon fuel produced from the crude oil extracted from the Site should be brought into account in the EIA as indirect effects of the project or not.

322. In that regard, at paras 57-60, Sir Keith Lindblom cited a number of authorities, including *R (Blewett) v Derbyshire County Council* [2003] EWHC 2775 (Admin); [2004] Env LR 29; *Bowen-West v Secretary of State for Communities and Local Government* [2012] EWCA Civ 321; [2012] Env LR 22; and *Friends of the Earth*, paras 126-144 in the judgment of Lord Hodge and Lord Sales. Sir Keith Lindblom and Lewison LJ considered that the Council's assessment that the downstream greenhouse gas emissions from eventual use of the refined fuel were not indirect effects of the project within the meaning of article 3(1) of the EIA Directive could not be said to be irrational, and therefore was a lawful assessment according to this standard.

323. In my respectful opinion, however, that is not a satisfactory way of examining the issue regarding the application of the EIA Directive which arises in this case. If correct, it would mean that one local authority conducting an EIA for a project to drill for oil could lawfully regard the downstream greenhouse gas emissions following on from that project as "indirect significant effects of the project" within the meaning of article 3(1) of the Directive, while another local authority conducting an EIA for the same kind of project could lawfully conclude that such emissions were not "indirect significant effects" of that project within the meaning of that provision. This would lead to inconsistent and unprincipled differences in result depending on the political and policy approach of the relevant decision-maker.

324. That cannot have been intended to be the effect of the EIA Directive in relation to such a fundamental issue of its interpretation which is common across a range of equivalent cases. The EIA Directive is intended to harmonise the approach to be adopted on common issues, not to authorise radically different approaches to identical common fundamental issues of this kind.

325. Accordingly, I consider that there is considerable merit in the approach of Holgate J at first instance in this case. The answer to be given on such a fundamental question affecting the application of the EIA Directive ought to be the same and should be taken to be determined one way or the other as a matter of principle according to the terms of the Directive, read in the light of the purpose and the scheme of the Directive.

326. This is not to doubt the guidance in the authorities referred to in para 322 above. In many cases, whether a particular environmental effect is sufficiently connected with a particular project so as to qualify as an "indirect effect of the project" will call for an evaluative assessment by the planning authority in the light of the scientific and other evidence in the specific circumstances of that case. Where the application of the general test set out in the EIA Directive turns on the specific circumstances of an individual case, it is the rationality standard which applies. However, in some circumstances an issue concerning the application of that test may be so fundamental to the operation of the EIA Directive and so clearly framed in a common way across a range of cases that

only one answer can lawfully and rationally be given regarding the application of that test. In my view, that is the position here.

(6) The approach of *Holgate J*: interpretation of the EIA Directive as a matter of law

327. It follows from the discussion above that I consider that *Holgate J* was right to approach the issue regarding the application of the EIA Directive in this case as a matter determined directly by a proper interpretation of the Directive as a matter of law, rather than as determined by an assessment of whether the Council was rational or not in deciding that the downstream greenhouse gas emissions relied on by the appellant were not “indirect effects” of the oil well project at the Site. If the Council had assessed, to the contrary, that they were “indirect effects” of that project, requiring consideration as part of the EIA, it would have erred in law. On a fundamental issue like this, there was only one proper answer that could lawfully and rationally be given when applying the EIA Directive according to its terms. This was the approach which Mr Richard Moules KC, for the Secretary of State, endorsed at the hearing in this court. I agree with his submission.

(7) The inconsistency point

328. The inconsistency point raised on the appeal is explained at para 198 above. In my judgment, in agreement with the Court of Appeal, there is no merit in it. In considering whether to grant planning permission, the Council was obliged to have regard to national policy promulgated by the Government regarding climate change and the extraction of oil. It did not err in doing so. National planning policy is a relevant material consideration when considering whether planning permission should be granted for a development. As I have explained above, the approach to be adopted when balancing the economic desirability of extraction of minerals, including oil, and security of energy supply against wider detrimental impacts from such activity, including their effect on climate change, is pre-eminently a matter for national policy, not local determination.

329. On the other hand, the application of the EIA Directive in relation to the proposed development was the responsibility of the Council, as local planning authority. The Council had to comply with its legal obligations under the EIA Directive. It did so.

330. There was no inconsistency involved in the Council’s approach to these two matters. The EIA Directive leaves matters of general policy in relation to the extraction of oil and climate change open for determination at a national level, and the Council was right to take national policy on this point into account in the way it did.

Conclusion

331. For the reasons given above, which differ from those given by the majority in the Court of Appeal but accord with those given by Holgate J, by the Court of Session in *Greenpeace* and by the Supreme Court of Ireland in *Kilkenny Cheese*, I would dismiss this appeal.

332. In relation to the attempt in *Kilkenny Cheese* and in the present case to enlist the EIA Directive in the worthy cause of combating climate change, by seeking to press it into service in relation to requiring EIA in respect of downstream or scope 3 greenhouse gas emissions, it is relevant to bear in mind the cautionary words of Lord Bingham of Cornhill in *Brown v Stott* [2003] 1 AC 681, 703, quoting from *Hamlet* in relation to the European Convention on Human Rights:

“The Convention is concerned with rights and freedoms which are of real importance in a modern democracy governed by the rule of law. It does not, as is sometimes mistakenly thought, offer relief from ‘The heart-ache and the thousand natural shocks That flesh is heir to.’”.

As Lord Bingham pointed out, that Convention had to be interpreted according to its terms, not in an effort to produce a remedy for every problem which might be identified in a particular situation. So, in the present context, the EIA Directive, interpreted according to its terms, has a valuable role to play in relation to mitigating greenhouse gas emissions associated with projects for which planning permission is sought, but it should not be given an artificially wide interpretation to bring all downstream and scope 3 emissions within its ambit as well. That has not been stipulated in the text of the EIA Directive, is not in line with its purpose and would distort its intended scheme.

333. In *Brussels Airport*, the CJEU observed (para 29) that “a purposive interpretation of the Directive [in that case the 1985 Directive, now the EIA Directive] cannot ... disregard the clearly expressed intention of the legislature”. In my view, in the present case both the clearly expressed intention in the text of the EIA Directive and a purposive interpretation of that Directive point to the same result.

Appendix 2: CC3.1 Kilkenny Cheese SC decision



**AN CHÚIRT UACHTARACH
THE SUPREME COURT**

S:AP:IE:2021:000091

[2022] IESC 8

**O'Donnell CJ
Dunne J
Charleton J
Woulfe J
Hogan J**

Between/

AN TAI SCE - NATIONAL TRUST FOR IRELAND

Appellant

-AND -

**AN BORD PLEANÁLA, THE MINISTER FOR COMMUNICATIONS,
CLIMATE ACTION AND THE ENVIRONMENT, IRELAND AND
THE ATTORNEY GENERAL**

Respondents

-AND-

KILKENNY CHEESE LIMITED (FORMERLY JHOK LIMITED)

Notice Party

JUDGMENT of Mr. Justice Gerard Hogan delivered on the 16th day of February 2022

Part I: Introduction and Background

Introduction

1. In 2021 the Oireachtas gave legislative approval to a decision by the Government to effect significant and far-reaching changes to the structure of Irish society so that we

could achieve the goal of carbon-neutrality by 2050. This decision reflects commitments made not only by the Irish Government, but also by the other Member States of the European Union and by the Union itself to give practical effect to a range of international commitments designed first to arrest and ultimately to eliminate the continued dependence on fossil fuels and other similar practices contributing to the increase in greenhouse gas emissions (“GHGs”).

2. While the detail of these legislative changes do not directly concern or govern the present appeal, the following extract from the Long Title of the Climate Action and Low Carbon Development (Amendment) Act 2021 (“the 2021 Act”) nonetheless succinctly describes the aims of both the Oireachtas and the Government:

“An Act to provide for the approval of plans by the Government in relation to climate change for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050 and to thereby promote climate justice...”

3. Agricultural emissions – not least from the dairy sector – also present a challenge in this context. It is these emissions which form a key part of the overall context of this appeal which concerns the indirect environmental effects which the construction and operation of a proposed major cheese factory are said to entail. Will this lead to enhanced milk production (and, by extension, greater GHG emissions), or will this milk be produced in any event? And, one way or the other, should the likely emissions from this enhanced milk production be identified and assessed as part of the required environmental impact assessment in respect of the cheese factory project?
4. Article 3(1) of the Environmental Impact Assessment Directive 2011 (2011/92/EU) (“the EIA Directive”) (as inserted by Article 1(3) of Directive 2014/52/EU) articulates what at first blush seems a straightforward principle. It provides that every environmental impact assessment shall “identify, describe and assess” in an appropriate manner “in the light of each individual case, the direct and indirect significant effects of a project” on a range of matters, including biodiversity and “land, soil, water, air and climate.” The object of the EIA Directive is itself perfectly clear, in that it seeks to ensure that the likely environmental impacts of any major project are themselves considered and assessed before any development permission is granted, even if, as this Court has already held, “the outcome of that examination, analysis, evaluation and

identification informs, rather than determines, the planning decisions which should or may be made”: *Fitzpatrick v. An Bord Pleanála* [2019] IESC 23, [2019] 3 IR 617 at 642, per Finlay Geoghegan J.

5. The difficulty arises in the application of this principle and, specifically, the reference to significant indirect effects. Nearly every major construction project will have both direct and indirect effects on the environment. The question is: what is meant by “significant indirect effects of the development” in Article 3(1) of the EIA Directive?
6. As I have already hinted, this problem arises in the present appeal in an acute form. In these judicial review proceedings the appellant seeks to quash a decision of An Bord Pleanála dated the 30th June 2020 to grant planning permission in respect of an application by the developer Notice Party to construct a major cheese factory at Slieverue, Co. Kilkenny. The developer is a joint venture between Glanbia and a Dutch company, Royal-a-Ware. It is envisaged that this project will facilitate a move by Glanbia from the supply of cheddar cheese to the UK market to the development of different lines of cheese production designed principally to satisfy demand in the continental European markets.
7. The central issue in this appeal is whether the Board was under an obligation to assess – whether for the purposes of an environmental impact assessment under the EIA Directive or an appropriate assessment under the Habitats Directive – the upstream consequences of the operation of the proposed cheese factory and, specifically, the milk that is necessary to supply this factory. At the heart of the appellant’s objections to this grant of permission is its contention that such is the scale and size of the proposed factory that it will consume very large quantities of milk – estimated to be some 4.5% of the national milk supply in 2025 – and that this milk can only realistically be sourced by an expansion of the national herd, leading in turn to enhanced methane and other GHG emissions. These are said to be the indirect consequences which will flow from the construction of this factory. The respondents maintain, however, that there is in fact no causal link between the anticipated increase in milk production and the factory. They contend that this increase in milk production will occur in any event, so that even if this increase in milk production results in increasing GHGs, these indirect environmental effects will not be as a result of the operation of the factory.

8. Before considering these difficult and troubling questions, it is necessary first to describe the parties and to set out the background to the present proceedings.

Background

9. The appellant is a non-governmental organisation dedicated to the protection and conservation of the environment. As such it enjoys a privileged status under the provisions of the Planning and Development Act 2000 and it was a statutory consultee in respect of this project. No serious challenge has been advanced as to its general standing to advance the present proceedings, although its entitlement to advance discrete and particular arguments has been challenged. For its part, the developer Notice Party is a joint venture between an Irish multi-national (Glanbia) and a Dutch company, Royal-A-Ware. Purely for reasons of convenience, I propose to describe the developer as Glanbia.
10. In these proceedings the appellant seeks to quash a decision of the Board to grant permission to the Notice Party to construct and operate a cheese manufacturing plant at Slieverue, Co. Kilkenny. The appellant was given notice of the original application for planning permission by the planning authority, Kilkenny County Council, as a statutory consultee, pursuant to Article 28(1) of the Planning and Development Regulations 2001. In accordance with these regulations, the appellant was also provided with details of the various assessments undertaken by the Notice Party including those made under the EIA Directive and the Habitats Directive.
11. As a statutory consultee, the appellant made a submission to the planning authority on the 23rd October 2019. Notwithstanding the appellant's submission, Kilkenny County Council decided to grant permission for the development on the 14th November 2019. Following the County Council's decision, the appellant appealed the permission to the Board on the 11th December 2019 on the ground that permission would prevent the State from meeting its climate targets, which requires the reduction of the national herd of cows, and would lead to unsustainable and adverse environmental impacts.
12. The Board's inspector produced a report on the 15th June 2020 which was favourable to the planning application. In her report the inspector refers to a number of national policies and regional and local plans. She also addresses potential indirect effects of the proposed cheese factory (at paragraph 8.4.2.) including the effect on dairy farms but concludes that these effects were too remote to be fully assessed. She further concluded

that, based on the evidence that she received, the supply of milk to the proposed cheese factory would not result in any additional emissions beyond what was currently projected by the Government (at paragraph 8.6.3).

13. The environmental impact assessment report itself envisages that the proposed cheese factory will require 450 million litres of milk each year, of which approximately 20% is already in circulation. The remaining milk will be sourced from Glanbia's own milk suppliers. This consists principally of some 4,500 farms, largely based in Kilkenny and surrounding counties. Some 75% of these farms have rivers or streams or other watercourses running through them or are immediately adjacent to them. Of these farms only 57% have nutrient management programmes designed to mitigate water quality deterioration. A significant portion of the milk supply for the plant is already available but is currently supplied to other processors.
14. In the High Court Humphreys J delivered a written judgment on the 20th April 2021 dismissing the application for judicial review: [2021] IEHC 254. By a subsequent decision delivered on the 2nd July 2021 Humphreys J refused leave to appeal to the Court of Appeal: see [2021] IEHC 422. (I will return presently to these two judgments). By a determination dated the 23rd September 2021 this Court granted leave for a direct appeal to this Court pursuant to Article 34.5.4 of the Constitution: see [2021] IESCDET 109.
15. Two judgments have already been delivered by this Court in respect of these proceedings. The first concerned a significant disagreement between the three parties (An Taisce, the Board and Kilkenny Cheese) as to the scope of the leave to appeal granted by this Court in its Determination. In a judgment delivered on the 7th December 2021 this Court held that the appellant should be allowed to raise at the substantive hearing all of the grounds set out in its Notice of Appeal, including arguments pertaining to the environment effects of the off-site milk production and the Water Framework Directive (Directive 2000/60/EC): see *An Taisce v. An Bord Pleanála (No. 1)* [2021] IESC 79.
16. The second judgment concerned the question as to whether the Attorney General should be permitted to be joined as a party to this appeal in his capacity as guardian of the public interest. In a judgment delivered on the 21st December 2021 this Court held that the Attorney General should be permitted to be joined as a party to this appeal subject

to the condition that he must abide by his own costs: see *An Taisce v. An Bord Pleanála (No.2)* [2021] IESC 83.

17. In light of this Court’s judgment delivered on the 7th December 2021 the precise issues to be determined can be summarised as follows:
- a. The extent of the obligation on the Board to assess the indirect environmental impacts of the proposed cheese factory under Article 2(1) of the Environmental Impact Assessment Directive (Directive 2011/92/EU as amended) (“the EIA Directive”) and Article 6(3) of the Habitats Directive (Directive 92/43/EEC as amended) and, specifically, whether the obligation includes an assessment of the indirect environmental impact of the off-site milk which will be needed to supply the factory.
 - b. The correct approach to evidence and argument in respect of whether all reasonable scientific doubt has been removed such that a decision maker can conclude that a proposed development will not adversely affect a European Site having regard to its conservation objectives, as required by Article 6(3) of the Habitats Directive.
 - c. The extent of the Board’s obligation under the Water Framework Directive to assess the environmental impact of the discharge of pollutants on adjoining rivers and the treatment of scientific evidence in this respect.

Part II: The High Court judgments

The Decision of the High Court

18. The appellant commenced judicial review proceedings in the High Court arguing that the Board had failed to carry out adequate environmental assessments of the production of milk that would be necessary for the cheese factory. The appellant further sought to impugn the decision of the Board on grounds which had not been raised in the planning process, namely that the Board had failed to conduct an adequate appropriate assessment as required under the Habitats Directive and had acted in breach of the Water Framework Directive by granting permission of a project that will result in effluent discharge and thus additional pollutants to the River Suir (which was said to have not attained “good” status for the purposes of Article 28 of the Surface Water Regulations (SI No. 272 of 2009)).

19. In the High Court proceedings the Board and the Notice Party challenged the appellant's standing to raise these latter issues, though did not contest the standing of the appellant to raise the issue that the milk supply should have been assessed as part of the project. The High Court nevertheless proceeded to consider all of the grounds raised on their merits. In his first judgment Humphreys J rejected the appellant's central argument regarding the off-site environmental impact of the proposed milk production, saying (at paragraph 46):

“The basic reason is that effects of raw material production where such production is sufficiently removed from the project as not to be capable of assessment in site-specific terms are not to be considered part of the project for the purposes of the EIA or AA. Such effects need to be considered on a more programmatic basis and hence lie outside the direct purview of grounds from challenging an individual planning decision.”

20. The judge had earlier stated (at paragraph 13) that:

“...that doesn't mean that production could never be sufficiently proximate as to require assessment – just that that has not been demonstrated here, either by reference to the relationship between the production and the project or by reference to expert economic evidence.”

21. In his second judgment (dealing with the application for a certificate) Humphreys J clarified (at paragraph 17) that it is the effects of the project which are subject to an assessment, regardless of whether they are site-specific or not:

“If the effects concerned are the effects of the project, then they do require assessment whether they are site-specific or not. The No 1 judgment should be read as subject to that clarification. But that doesn't help the applicant here because I didn't think the effects were the effects of the project.”

22. In his first judgment Humphreys J went on to reject the appellant's arguments under the Habitats Directive and the Water Framework Directive. He addressed first the appellant's questions under the Habitats Directive, namely, whether the inspector erred in screening out certain interests, such as Atlantic salt meadows, in the appropriate assessment, and the alleged failure to adequately consider the impact of treated effluent. He found that as “there was no scientific evidence put before the board to contradict

the Natura Impact Statement... it cannot be maintained now that the board acted in a way which left open scientific doubt when there was no such doubt on the materials which it had” (at paragraph 26). He made a similar statement as regards the impact of treated effluent (at paragraph 29).

23. Humphreys J then went on to address the Water Frameworks Directive issue on the merits. On this point, he held that the appellant had not overcome the onus of proof necessary to persuade him that the particular part of the river into which the discharge will take place had not been designated as “good” for the purposes of Regulations 28 of the Surface Water Regulations S.I.272 of 2009 (at paragraph 32).
24. It should be noted at this stage that there is some dispute over what Humphreys J actually held in respect of the Habitats Directive issue. The appellant maintains that the High Court precluded it from impugning the conclusions of the Board in respect of the planning process on the basis that An Taisce had not adduced scientific evidence in respect of the points that it had raised, which An Taisce argues is erroneous on the part of the High Court. The Board and the Notice Party, however, argue that this was not what the High Court in fact held, and the High Court’s point was that no scientific evidence had been raised – by anyone – which would suggest that the Board was not entitled to reach the findings that it did in its appropriate assessment.

Part III: The submissions of the parties

The Appellant’s Submissions

25. At the heart of the appellant’s case lies the contention that the Board did not properly take into account the upstream consequences of the operation of the proposed cheese factory. Specifically, it is contended that there was no adequate environmental impact assessment of the 450 million litres of milk necessary to supply the factory. It is further said that such supply will have consequences for Ireland’s greenhouse obligations in that, for example, the supply of milk at these quantities will have consequences for methane and nitrate emissions. The appellant accordingly maintains that the Board was under an obligation under Article 2(1) of the EIA Directive to assess these wider (if indirect) environmental impacts due to the demand for milk likely to be created by the project.

26. The appellant originally maintained that the milk supply was originally part of the project itself. On appeal to this Court and in response to a written request from the Court in advance of the oral hearing for clarification of this point, the appellant expressly – and, in my view, clearly correctly - accepted that the milk supply did *not* form part of the project itself but was rather an indirect effect. To anticipate somewhat, it is worth observing at this juncture that this is in fact a significant step in the entire argument regarding the scope of the project, because it means that only an actual increase in milk production by reason of the project – something which almost by definition is difficult to identify and assess – is capable of being regarded as a significant environmental effect.
27. The appellant adopts a similar argument in respect of Article 6(3) of the Habitats Directive insofar as these indirect impacts may affect a Natura 2000 site. But it also argued that the Board’s inspector erred in screening out certain interests, particularly Atlantic salt meadows, in any assessment. (Atlantic salt meadows are communities of salt-tolerant small plants which congregate in tidal estuaries and rivers). It also contended that the Board had failed to have regard to the impact of treated effluent.
28. A slightly different point is made in respect of the Water Framework Directive (Directive 2006/60/EC): it is said that the Board was precluded from granting permission in circumstances where this will lead to an increased discharge of pollutants into the River Suir and where it is said that that waterbody has not achieved what is termed “good” status for the purposes of Article 28 of the Surface Water Regulations (SI No. 272 of 2009).

The Board and Notice Party’s Submissions

29. The Board and Notice Party’s submission in response to the appellant are largely the same and can be summarised together. The Board and Notice Party argue, in the first place, that if the Board was under an obligation to assess the environmental impact of the off-site production of milk for the proposed cheese factory under the EIA Directive this could only be on the basis that the off-site production of milk is an indirect environmental impact that falls within the ambit of that Directive. The Board and Notice Party note that in this Court’s decision in *Fitzpatrick v. An Bord Pleanála* [2019] IESC 23, [2019] 3 IR 617 it was held that the EIA Directive only requires an EIA to be carried out in respect of the *project* for which planning permission is sought, which is

defined by reference to the proposed development which is the subject matter of the application for planning permission. The Board and Notice Party contend that in this case it is clear from the application for planning permission that the proposed development was the “construction and operation of a cheese factory.” The Board and Notice Party refute An Taisce’s assertion that the proposed development also includes the off-site production of milk, not least because such an assertion is inconsistent with An Taisce’s subsequent argument that that production is an *indirect* effect of the proposed development.

30. Having concluded that the off-site production of milk is not part of the project for which planning permission was sought, the Board and Notice Party next consider the question of whether the off-site production of milk could nevertheless be subject to assessment under the EIA Directive as an indirect environmental effect. It is said that this question raises two issues: whether the Board was required to assess the environmental effects of the off-site milk production at all; and, if so, whether the assessment that was actually carried out by the Board was irrational and thus unlawful (since the Board and Notice Party contend that despite the fact that the Board was not obliged to consider the effects of the off-site milk production in its EIA, it did so anyway).
31. In respect of the first issue, the Board and Notice Party submit that the High Court was correct to find that the Board did not have an obligation to assess the environmental impact of the off-site milk production on the basis that it was too remote. It is said that all proposed developments must have a beginning and end and thus a consideration of remoteness must come into play. This, the Board and Notice Party contend, is supported by the High Court decision in *An Taisce v. An Bord Pleanála* [2015] IEHC 633 in which White J interpreted the words in Article 3 of the EIA Directive – “in light of each individual case” – as meaning that there was a limit to the obligation to assess certain matters and that this limit must be framed by reference to the question of remoteness. The Board and Notice Party then both refer to the High Court of England & Wales’ decision in *R.(Finch) v. Surrey County Council* [2020] EWHC 3566 (Admin) and the Scottish Court of Session’s decision in *Greenpeace Limited v. The Advocate General* [2021] CSIH 53 to guide this Court on how the question of remoteness should be applied. The Board and Notice Party maintain that on a correct application of the case law the off-site production of milk does not constitute an “indirect” environmental

impact for the purposes of the EIA Directive and thus it was not under an obligation to assess as much.

32. The Board and Notice Party further contend that even if the Board was under such an obligation, it discharged that obligation by the assessment that it in fact conducted. The Board and Notice Party emphasise that the EIA completed by the Board included an assessment of the potential indirect effects arising from the production of milk supply and that the Report concluded that the proposed development would not increase milk production and would not result in any additional emissions beyond those that were already projected by Government and accommodated in Government policy. The Board and Notice Party submit that the Board was entitled – and indeed required – to have regard in that assessment to the National Climate Change Action Plan and the Draft National Climate Air Roadmap for the Agricultural Sector, and that An Taisce’s suggestion that this is inconsistent with this Court’s decision in *Friends of the Irish Environment v Government of Ireland* [2020] IESC 49 is misplaced. The Board and Notice Party submits that the Board was also entitled to have regard to mitigation schemes implemented in the dairy industry for reasons outlined from paragraph 66 of its supplemental submissions. It is therefore submitted that any obligation that the Board was under to assess the indirect environmental impact of the off-site milk production was discharged.
33. In respect of the Habitats Directive, the Board and Notice Party address in their original submissions the arguments advanced by An Taisce to the effect that the Inspector erred in screening out certain interests from the appropriate assessment, including the Atlantic salt meadows, and failed to have regard to the impact of treated effluent. The crux of their argument on this point is that An Taisce has mischaracterised the finding made by the High Court in its principal judgment in dismissing An Taisce’s application. It is argued that An Taisce has erroneously suggested that the High Court held that in order to pursue a challenge to the appropriate assessment under the Habitats Directive it was necessary for An Taisce to have placed scientific evidence before the Board. The Board and Notice party contend, however, that this was not what was found by the High Court, and that the point being made by the Court was that there was nothing before the Board which raised any scientific doubt with regards to the Natura Impact Statement. In this respect, the Board and Notice Party submit that the High Court was correct to dismiss An Taisce’s application for judicial review on this point as there was, indeed,

nothing to suggest that the Board was not entitled to make the findings in its report that it did.

34. The Board and Notice Party adopt a similar argument to that made under the EIA Directive in respect of the obligation to assess the indirect environmental impact of off-site milk production under the Habitats Directive. They first make the point that contrary to what is suggested in An Taisce's legal submissions, the effects of milk production were considered as part of the appropriate assessment in so far as the Inspector identified the effect of milk production as having a potential indirect impact which was likely to change year to year. The Board further noted that the Inspector raised an important point to the effect that these off-site activities would be subject to other environmental controls such that they are unlikely to adversely affect the integrity of any European sites. The Board and Notice Party then both repeat the argument that, in any event, because the off-site production of milk did not constitute part of the "project" under Article 3 of the EIA Directive for the purpose of the appropriate assessment, the Board was not in fact required to carry out any assessment of the potential effects of the milk production. But that, even if it was so required, the appropriate assessment conducted by the Board did consider the potential indirect effect of the milk production and accordingly it did also discharge any obligation it may have had under the Habitats Directive.
35. Finally, in relation to the Board's alleged non-compliance with the Water Framework Directive, it is argued that An Taisce does not have sufficient *locus standi* to raise the argument that the Board was precluded from granting planning permission in circumstances where this will lead to an increased discharge of pollutants into the River Suir and where it is said that that waterbody has not achieved what is termed "good" status for the purposes of Article 28 of the Surface Water Regulations (SI No. 272 of 2009). The Board and Notice Party note that this was not a ground of challenge which the High Court had granted leave to apply for judicial review and that, accordingly, it is not a ground which An Taisce is entitled to pursue under section 50A(5) of the Planning and Development Act 2000. Nevertheless, in so far as the ground was raised in the High Court anyway, the Board and Notice Party underline that it was not dismissed on the basis of a *locus standi* objection but rather on the basis that the High Court determined that An Taisce had not overcome the onus of proof in respect of any

of the arguments that it made. The Board and Notice Party contend that the High Court was correct in this finding and it should be upheld accordingly.

The Attorney General's Submissions

36. The Attorney General's submissions largely mirror those filed by the Board and the Notice Party. The Attorney General submissions begin by considering whether the obligation to assess the indirect environmental impacts of the proposed cheese factory under the EIA Directive extends as far as including the off-site production of milk. He submits that the "project" to be assessed for the purpose of a particular development consent is limited to that in respect of which development consent was sought (citing *Fitzpatrick* at paras 36 and 37), and the Attorney General agrees with the High Court in this respect that *Fitzpatrick* determines this matter definitively. In the instant case the Attorney General considers that the "project" for which development was sought does not include the off-site production of milk and that therefore the milk production does not fall within the scope of "project" which needs to be assessed.
37. Next the Attorney General turns to the question of whether the off-site production of milk could nevertheless be subject to assessment as an *indirect* effect of the "project". It is the Attorney General's position that the "indirect effects" of a "project" for the purposes of the EIA Directive is fact-specific to the individual case and is determined by reference to the question of remoteness. In this regard the Attorney General agrees with the High Court that the off-site production of milk could in certain circumstances be sufficiently proximate as to require assessment, but that such proximity has not been demonstrated here, either by reference to the relationship between the production and the project or by reference to expert economic evidence. In support of this, the Attorney General, like the Board and the Notice Party, draws comparisons with what was decided in related cases such as *An Taisce v. An Bord Pleanála* [2015] IEHC 633, *R (Finch) v. Surrey County Council* [2020] EWHC 3566, and *Greenpeace Limited v. The Advocate General* [2021] CSIH 53. Applying the analysis in those cases here, the Attorney General concludes that the off-site production of milk in this case may have environmental consequences as a matter of fact, but that is not to say, as a matter of law, that it falls within the ambit of "indirect effects" for the purposes of the EIA Directive.

38. In the alternative, if it is decided that the milk production is an indirect effect, the Attorney General submits that the Board did assess the effect of such production, in so far as it was practicable to do so, and therefore the Board did discharge its duty under the EIA Directive. It is noted that the High Court did, indeed, find that the Board undertook an assessment of the effect of milk production even though same was unnecessary and that, by necessity, this assessment was limited in nature. Furthermore, the Attorney General contends that the purported inadequacy of the assessment does not, in any case, immediately give rise to grounds to interfere with the Board's decision to grant planning permission unless the assessment was so inadequate so as to be irrational (*O'Keefe v. An Bord Pleanála* [1993] 1 IR 39). It is submitted that this threshold has not been met and thus this ground of appeal should be dismissed.
39. Separately, the Attorney General addresses the similar argument made by the appellant under the Habitats Directive insofar as the indirect effects of the off-site milk production may affect a European Site. The Attorney General observes that the appellant does not explain how a failure to assess the indirect effects of the off-site milk production is alleged to have arisen in light of the fact that the following is not known: (i) the location of the farms which may supply milk to the cheese factory; (ii) what "sites" the farms are proximate to; (iii) what, if any, are the pathways from the farms to the "sites"; and (iv) how many farms are proximate to those "sites" – all of which, the Attorney General contends, are key pieces of information that would be required to carry out an appropriate assessment. The Attorney also notes that, in any case, as with the adequacy of the assessment under the EIA Directive, the adequacy of the assessment under the Habitats Directive is a matter for the Board and can only be challenged on grounds of irrationality.
40. The Attorney General next considers the argument made by the appellant under the Habitats Directive that the Inspector erred in screening out certain interests, particularly Atlantic salt meadows, in any assessment and failed to have regard to the impact of treated effluent. The Attorney General raises the same two objections to these arguments as made by the Board and the Notice Party, namely that there is an issue of *locus standi* that stands to be resolved and a question as to the proper approach to evidence in respect of whether all reasonable scientific doubt has been removed such that a decision maker can conclude that a proposed development will not adversely affect a European Site. In essence, the Attorney General states that the proper role of a

court in judicial review proceedings is well-established: the appellant in this case is not entitled to an appeal or a *de novo* hearing and is therefore not entitled to raise new arguments which were not ventilated before the Board. The Attorney General argues that there are good reasons for requiring an applicant to raise any issues it may identify before the planning authorities as can be seen from the case-law. The Attorney General submits that there is nothing in the decisions of the CJEU which would require the Court to disregard these principles and that therefore the appellant should be found to lack standing on these grounds.

41. On the issue of the alleged requirement to adduce scientific evidence, the Attorney General argues that the appellant has failed to acknowledge that the High Court did not actually hold that there is a requirement for a party to have adduced scientific evidence to be entitled to impugn conclusions reached by the consent authority for the purposes of the EIA or Habitats Directive. What the High Court actually held, in the Attorney's view, is that there must be some evidential basis for arguments made in judicial review proceedings by reference to the materials before the decision-maker, but that it is not necessary that the appellant has adduced this evidence. Accordingly, it is submitted that as the appellant cannot point to any evidence put before the Board – by the developer, or by any other member of the public – which would put into reasonable scientific doubt the findings made by the Board in its appropriate assessment, the High Court was perfectly entitled and correct to dismiss the appellant's application on this ground.
42. Finally, as regards the Water Framework Directive, the Attorney General similarly argues that the appellant has failed to point to any material that was before the Board which would suggest that it was not entitled to find that relevant surface water bodies had not achieved "good" status. The Attorney General also points out that the burden of proof is on the appellant to demonstrate that the status of the relevant water bodies was not properly identified by the Board and that the High Court was correct to conclude that the appellant had not discharged this burden.

Part IV: The Challenge based on the EIA Directive

The requirements of the EIA Directive

43. I propose first to consider the challenge based on the alleged non-compliance with the requirements of the EIA Directive. I then propose to consider separately the appeal so far as both the Habitats Directive and the Water Framework Directive is concerned.

44. In any consideration of this question, it is necessary first to commence with an analysis of the EIA Directive itself. While the first iteration of the EIA Directive dates from 1985, this was replaced by a consolidated version, Directive 2011/92/EU. This itself was amended in 2014 by Directive 2014/52/EU (“the 2014 Directive”). These various provisions have been transposed into Irish law by Part X of the Planning and Development Act 2000 (as amended) and by s. 171A(1) of that Act. Nothing turns on this so far as the present appeal is concerned and no issue has been raised regarding the adequacy of the transposition of the 2014 Directive.
45. Recital 7 of the 2014 Directive acknowledges that concerns about climate change had increased over the preceding years. Recital 13 states that:
- “Climate change will continue to cause damage to environment and compromise economic development. In this regard it is appropriate to assess the impact of projects on climate (for example greenhouse gas emissions) and their vulnerability to climate change.”
46. The new version of Article 3(1) of the EIA Directive requires that the effect of the development in respect of climate must also now be considered. Recital 7 of that Directive provides that:
- “Development consent for public and private projects which are likely to have significant effects on the environment should be granted only after an assessment of the likely significant environmental effects of those projects has been carried out. That assessment should be conducted on the basis of the appropriate information supplied by the developer which may be supplemented by the authorities and by the public likely to be concerned by the project in question.”
47. Article 1(1) of the EIA Directive provides that:
- “This Directive shall apply to an assessment of the environmental effects of those public and private projects which are likely to have significant effects on the environment.”
48. The term “project” is itself defined by Article 1(2)(a) as meaning:
- “– the execution of construction works or of other installations or schemes,

– other interventions in the natural surroundings and landscape, including those involving the extraction of mineral resources.”

49. Article 2(1) provides:

“Member States shall adopt all measures necessary to ensure that, before development consent is given, projects likely to have significant effects by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects on the environment. Those projects are defined in Article 4.”

50. Article 3(1) now provides:

“The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

- (a) population and human health;
- (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
- (c) land, soil, water, air and climate;
- (d) material assets, cultural heritage and the landscape;
- (e) the interaction between the factors referred to in points (a) to (d).

51. Article 5(1) requires the developer to provide the information specified in Annex IV of the Directive. Paragraph 1(d) of Annex IV provides that this must include an estimate of the level of emissions which will be produced during the construction and operation phases and paragraph 5(f) states that there must be “a description of the likely significant effects of the project on the environment” resulting from “the impact of the project on climate (for example, the nature and magnitude of greenhouse gas emissions)”. The description should cover, inter alia, the direct and indirect effects of the project.

The evidence which was before the Board

52. It is next necessary to assess the evidence which was before the Board. This principally consisted of an EIA report (“EIAR”) prepared on behalf of the developer in September 2019, a Natura Impact Statement (“NIS”) from the same month and the report of the

Inspector dated the 15th June 2020, along, of course, with submissions from An Taisce and other interested parties and bodies. The EIAR also contained a range of important exhibits, including, for example, two important reports from Teagasc (the National Farm Survey 2017 and a March report entitled, “An Analysis of Abatement Potential of Greenhouse Gas Emissions in Irish Agriculture 2021-2030), along with a report from the Environmental Protection Agency entitled, “Nitrogen and Phosphorous in Irish Waters 2018”. It is only proper to say that all these documents are extraordinarily comprehensive and detailed.

53. Perhaps the first question which should be asked in this context was whether there was or is any evidence of a causal relationship between the factory and enhanced milk production in the State. A key contention of both the Board and the developer was that the increased milk production was going to happen in any event and that, in some senses, the proposed factory was a response to that anticipated increase in milk production rather than the other way around. Here a word by way of background may be appropriate.
54. Ireland has many advantages when it comes to milk production because, along with New Zealand, we have perhaps the most ideal climate for the grass fed and largely outdoor, pasture-based dairy production which results in a bountiful supply of high quality milk. To some extent, that production was artificially constrained by the introduction of the milk quota regime by the (then) European Economic Community in 1984. With the increased professionalism and productivity of farmers and the rise of indigenous agri-food multinationals there were many reasons why Irish milk production was set to grow significantly following the ending of the milk quota regime in April 2015.
55. This was, indeed, the conclusion of the EIAR itself (at paragraph 2.6):

“Following the removal of quotas, dairy production in Ireland has increased significantly. Within 12 months of the expiration of quotas, milk production had increased in Ireland by 37%. Comparing livestock surveys from the Central Statistics Office from December 2014 (shortly before the end of milk quotas) and December 2018 reveals that the number of dairy cows in Ireland had increased by 21.4% since the expiration of milk quotas, from 1.128 million in December 2014 to 1.369 million by the end of 2018. However, much of the growth occurred immediately after the end of the quota system and the trend of

dairy herd growth has been slowing in recent years...According to *Road Map 2025 for Dairy* and *People in Dairy Action Plan* the dairy herd is set to increase further from its current population of approximately 1.4 million to 1.7 million by 2025. Milk production per cow is also expected to increase from 5.036kg/cow to 5.739 kg/cow, giv[ing] a projected increase of approximately [2].6 billion litres of milk by 2025 to 9.8 billion litres/year from the current output levels of 7.2 billion litres/year. In regard to the 450 million/litres per year that will be required for proposed development from 2022, approximately 20% is already in circulation, and as such it will equate to approximately 4.5% of the milk pool projected to be available in Ireland in 2025.”

- 56.** I should perhaps pause here to clarify that the reference to “approximately 20% in circulation” is a reference to the milk which Glanbia currently re-sells to other producers but which will be instead re-directed to service the needs of this plant should it proceed as planned.
- 57.** The EIAR continues (at paragraph 2.9):
- “Glanbia already has a significant portion of the milk required for the proposed development available, as it is currently being resold to other processors. Additionally, milk production from the existing dairy herd is expected to increase by 1.5% year-on-year, which will increase the milk supply without additional emissions. Given the uncertainty surrounding Brexit, it is also expected that some of the milk currently supplying the existing UK cheddar cheese market will be diverted to the proposed development, depending on business conditions once the production commences.”
- 58.** The EIAR further states (at paragraph 6.7):
- “Given the already high degree of grassland cover in Ireland and the prevalence of pasture farming, it is expected that any increase in dairy production will be confined to improving efficiency coupled with the modest herd expansion on existing farms, rather than significant new lands being brought under agriculture, thereby limiting potential impacts on biodiversity.”
- 59.** Pausing at this point it can be said that that the focus of the EIAR so far as this issue was concerned was that any increase in the milk supply was projected to happen in any

event, regardless of whether the cheese factory went ahead or not. Implicit in this was the contention that the construction of the factory could not have upstream effects of this nature because there was, in essence, no co-relation between any anticipated increase in national milk production or in the national herd and the construction of the factory.

- 60.** Following the grant of permission by Kilkenny County Council of the 14th December 2019, An Taisce appealed that decision to the Board. In its appeal An Taisce noted the claim that the proposal would not require an increase in the dairy herd. It then stated (at paragraph 3.1):

“Even if the bulk of the subject plant’s milk supply would come from subject farms, the increase in productivity nevertheless represents a significant intensification of dairy production with a likely resulting exacerbation of the aforementioned adverse environmental impacts...The EAIR has not provided any data to indicate that productivity increase would not result in additional GHG and nitrogen emissions. Moreover, those other processors currently receiving Glanbia [milk] will still require a milk supply if the proposed cheese plant is built, thereby increasing the amount of milk needed and intensifying production. Additionally, the combination of dairy and related beef related projects under FoodWise 2025, of which the subject proposal is part, will entail an increase in the national herd.”

- 61.** This appeal was responded to in some detail in a submission made by Tom Phillips Associates on behalf of Glanbia on the 20th January 2019. In that submission Messrs. Phillips contended that (at paragraph 1.2):

“...the indirect effects to be addressed are those created by the proposed development, not the impacts of the 4,500 [number of] existing dairy farms, not the impacts of some future supplier farms (which are impossible to predict) and not the impacts of a sect[or] generally (that have been addressed).”

- 62.** This issue was addressed in even further detail at paragraph 3.3.2:

“It is impossible to state definitively the exact number of farms that will supply the proposed development, as some farms may change their structure in the future. Nevertheless, it is important to note that there will be no appreciable

land-use change as a result of the proposed development. As highlighted in section 2.9 of the EIAR, in addition to the significant portion of milk that is already available within the system (but being sold on to other industrial processors at present), an increase in 1.5% productivity gain, year on year, from the existing dairy herd, is expected across the farms in Ireland, and also within Glanbia's milk pool. This will be coupled with a modest expansion on existing farms. Productivity increase is typically based on increasing efficiency at the farms, including more efficient grassland management. Glanbia proactively promotes scientific-based mitigation measures which are detailed in section 8.8 'indirect impacts' of the EIAR. Glanbia's *Milk Planning Census 2019-2023* (based on data collected from farms that account for 86% of Glanbia's milk pool) shows that milk supply is predicted to increase from 2,347 million litres of milk in 2018 to 3,014 million litres of milk in 2023. This amounts to a 28% increase over the 5 years, or an additional 667 million litres of milk per year, arising from the aforementioned productivity gains and a modest increase in dairy herd numbers at Glanbia's supply farms (as per section 2.9 of the EIAR). This increase in milk supply arising from Glanbia's supply farms is encompassed both by *Food Wise 2025* and the national projected increase of milk production (figures produced by the Central Statistics Office) which is set out in further detail within this section. For clarity, this increase in milk production would occur regardless of whether the proposed development takes place, or not. In addition to the above stated milk sources, it is a further strategic priority to redirect some of the existing milk currently proposed for the UK market to the proposed development as a product/market diversification in response to Brexit uncertainties. While it is not possible to quantify this amount given the uncertainties surrounding the extent of impacts associated with the Brexit process, it is likely that this will be a further milk supply input for the development. To re-emphasise, this source relates to milk that already exists within the system, regardless of the requirements of the proposed development....[This information demonstrates] that the proposed development would not in itself drive increased milk production, but would essentially become an additional outlet for milk already in production or planned for production."

The Inspector's report

63. All of these matters were considered by the Inspector in her report dated the 15th June 2020. It should be said immediately that the report is an impressively comprehensive document running to some 86 pages. So far as the milk supply issue is concerned, the following comments of the Inspector should be noted.

64. She stated (at paragraph 8.6.3) that the “supply of milk to the proposed development will not result in any additional emissions beyond what is currently projected by the Government.” She then concluded (at paragraph 8.8.1) that she agreed that any “assessment of all 4,500 Glanbia farms is impractical. The EIAR and the NIS should assess the indirect effects of the proposed development if they are likely and to the extent that is reasonable and practicable at the time the planning application is lodged. However...there must be a limit or the effects will be too remote.” Further it should be done:

“in the light of each individual case... the indirect effects to be assessed in this case are those created by the proposed development: not the impacts of c. 4,500 dairy farms, not the impacts of some future expansion of dairy farms (which are impossible to predict) or the impacts of some future supplier farms (which are impossible to predict) and not impacts a sector generally (that have been addressed separately).”

65. The Inspector then went on say (at paragraph 8.8.2):

“The proposed development would not of itself drive increased milk production and any reference to an expected increase of milk production on Glanbia’s farms, or nation-wide, sits within a national policy context for a managed increase of dairy production in Ireland, subject to the implementation of mitigation measures. Further this national increase in milk production aligns with national climate change policy. Any objection to the principle of such national policy sits outside the scope of this appeal and relevant planning assessment.”

66. There are other statements in the report to similar effect. So, dealing with the impact on lands and soils, the Inspector stated (at paragraph 11.48):

“It is expected that the 450 million litres of milk required for the proposed development will mostly come from the existing Glanbia milk [supply] which comprise[s] approximately 4,500 farms with standard year to year changes. The increase in milk supply will largely come from the increase in productivity at the existing farm[s], i.e., there will be no significant increase in the number of new farms.”

67. So far as impact on climate is concerned, the Inspector stated (at paragraph 11.91):

“The production of 450 million litres of milk produces [0.513] megatonnes of CO₂ [equivalents]. However, this is expected to decrease due to the increase[d] production efficiency of the dairy herd and implementation of mitigation measures as previously outlined. Further, a significant portion of this milk will already be in circulation or will be produced as part of an increased milk supply regardless of whether the proposed development is in existence. These emissions are already accounted for and regulated through the National Climate Action Plan as part of dairy sector emissions. The proposed development will not directly or indirectly result in an increase of CO₂ emissions proportionate to the required milk input.”

68. The Inspector concluded (at paragraph 11.138):

“Impacts on climate are likely to arise in the production of 450 million litres of milk which produces [0.513 megatonnes] of CO₂ [or their equivalents]. While the impact of the proposed development alone is considered insignificant, there is an indirect impact. This impact is expected to decrease by virtue of the production efficiency of the existing dairy herd and implementation of mitigation measures as outlines in the EIAR. Further, these emissions are already accounted for and regulated through the National Climate Action Plan as part of dairy sector emissions. The proposed development will not directly or indirectly result in an increase of CO₂ emissions proportionate to the required milk input. The impacts arising would be mitigated through compliance with both the Government and Glanbia’s sustainability programme as outlined in the EIAR which I have reviewed and consider reasonable.”

69. The Inspector accordingly recommended the grant of permission.

The Board's decision

70. In its direction of the 25th June 2020 granting permission for the project the Board stated that it considered that the EIAR “provided information which is reasonable and sufficient to enable the Board to reach a reasoned conclusion on the significant effects of the proposed development on the environment, taking into account current knowledge and methods of assessment.” Crucially, however, it went on to identify the main “significant direct and indirect effects of the proposed development on the environment”. Dealing with the environmental effects of the milk supply issue, the Board stated (at page 5 of the decision):

“Indirect impacts on climate are likely to arise in the production of 450 million litres of milk but the emissions arising [have] already [been] accounted for and regulated through the National Climate Action Plan as part of the dairy sector overall emissions. The impact is expected to be offset by virtue of the increased production efficiency of the existing dairy herd, compliance with the Government’s and Glanbia’s sustainability programmes and implementation of other mitigation measures as outlined in the EIAR, including use of state of the art energy systems.”

71. The Board further stated (at page 6) that, having regard to the EIAR, it had concluded that:

“...subject to compliance with the conditions set out above, the effects on the environment of the proposed development, by itself and in conjunction with other development in the vicinity, would be acceptable. In doing so, the Board adopted the report and conclusions set out in the Inspector’s report.”

What exactly did the Board and the Inspector decide?

72. Against this background, one must then ask: what exactly did the Board (and, by extension, the Inspector) actually find and conclude? The principal finding of the Board appears to be that while the production of 450 million litres of milk will have indirect climate implications, these indirect effects are already known and measured in the context of existing Government policy in respect of GHGs from the dairy sector. These indirect effects will, in any event, be off-set and mitigated by a range of other factors.

73. It also seems implicit in this finding by the Board that the project will not *in and of itself* create a demand for milk production. This, in any event, was an express finding of the Inspector which the Board may be taken to have accepted. The Inspector herself frequently stressed in her report that any increase in the milk supply is likely to come from the enhanced productivity at the existing 4,500 Glanbia farms, changing production lines (so that milk currently utilised to make cheddar cheese for the UK market will be diverted to the new factory) and from the diversion of approximately 20% of the milk it currently sells to other suppliers to the new factory. As the Tom Phillips report itself had stated in several places (see, e.g., at paragraph 3.3.2) “this source relates to milk that already exists within the system, regardless of the requirements of the proposed development.”
74. While the Inspector expressly disclaimed any endeavour on her part to assess the environmental impacts of the milk production on the 4,500 farms on the basis that such was too remote from the project and would be impractical and unreasonable, at times her report nonetheless gives the impression that she did just that. Insofar as she looked at these indirect effects, it seems fair to say that she concluded that these indirect environmental impacts were already separately assessed and known and would, in any event, be mitigated by a range of measures.
75. While the Board (and the Inspector) must therefore be taken to have found that the factory will not *in and of itself* create a demand for milk, that is not quite the same thing as saying that a project which will take 4.5% of the national milk supply will not have significant effects on demand for milk production. The very fact that Glanbia proposes to divert the 20% of its existing milk supply which is currently sold to other producers to this factory in order to meet its milk requirements is illustrative of this. This will naturally create a significant vacuum in the existing milk market in the State and it would, I suggest, be unrealistic to expect that these other producers will not have to look elsewhere for supplies.
76. One must, of course, allow for the fact that – as the Tom Philips’ report demonstrated – the projected increase in dairy production will be the result of productivity increases generally. Naturally, these productivity increases will not be confined just to Glanbia suppliers, but other milk processors who are supplied by other farmers will also receive increased milk volumes arising the projected 1.5% year on year productivity increases.

77. Nevertheless, the existence of the factory is likely to reinforce and strengthen the overall demand for milk if only in the particular sense that in its absence the *demand* for milk generally would be reduced. At some elevated macro-economic level one may therefore say there is some link between the factory's requirements for milk and the milk supply. It is, of course, true that allowing for the fact that (as the Inspector found) general productivity increases leading to enhanced milk production would be more than enough to supply the factory's requirements, this is a process which is not infinite. It must accordingly be accepted that the establishment of a new factory which will require 4.5% of current national milk supply will have some relationship to, and possible effect upon, supply. This in turn may have some implications for general milk production within the State and, ultimately, the size of the national herd.

Whether the project will strengthen the overall demand for milk

78. In a complex market economy such as ours it is, of course, all but impossible to predict in advance all the consequences – which are likely in any event to be multi-factorial – of a major economic stimulus resulting from a new project which will take 4.5% of the national milk supply. While the Board found – and, on the evidence, was fully entitled to find – that the factory's requirements would be met from the existing Glanbia milk pool, this still cannot take from the inevitable conclusion that this project is likely to strengthen the *overall* demand for milk, with implications for general milk production on non-Glanbia farms and, as a consequence, environmental emissions arising as a result.
79. In effect, therefore, in the light of these findings from the Board (and, by extension, the Inspector) the EIA question reduces itself to this: are the implications for general milk production on non-Glanbia farms and, as a consequence, environmental emissions arising as a result part of “indirect significant effects of a project” within the meaning of Article 3(1) of the EIA Directive which the EIA itself was required to identify and assess?
80. The key words of Article 3(1) of the EIA Directive are the “direct and indirect significant effects of a project on the following factors...” It should be recalled that the word “project” is defined by Article 1(2)(a) as meaning “the execution of construction works or of other installations or schemes, other interventions in the natural

surroundings and landscape, including those involving the extraction of mineral resources.”

- 81.** The definition of what constitutes a “project” for this purpose is, of course, of critical importance. (While the term “project” is not as such used in our domestic law, it corresponds in substance to the term “proposed development” in s. 172(1A) of the 2000 Act: see *Fitzpatrick v. An Bord Pleanála* [2019] IESC 23, [2019] 3 IR 617 at 628, per Finlay Geoghegan J.). It might, for instance, be argued that where ostensibly off-site activities are so closely and functionally connected with the on-site development that they should really be classified as part of the project itself. Thus, for example, the off-site assembly – perhaps even at a location remote from the site – of industrial plant or buildings which are then transported to the site might, perhaps, be such an example.
- 82.** Apart from these special cases, there are also cases where there is a clear and unbreakable inter-relationship between the project itself and certain off-site activities such that a causal relationship between the construction or operation of the project and certain direct or indirect environmental consequences has been clearly established.
- 83.** An example here is supplied by *Ó Grianna v. An Bord Pleanála* [2014] IEHC 632. Here the issue was whether the project consisted of the construction of wind turbines alone or whether the fact that they had to be connected to the national grid had also to be taken into account. Peart J opted for the latter interpretation, saying (at paragraph 27 of his judgment) that:
- “I am satisfied that the second phase of the development in the present case, namely, the connection to the national grid, is an integral part of the overall development of which the construction of the turbines is the first part... The wind turbine development on its own serves no function if it cannot be connected to the national grid. In that way, the connection to the national grid is fundamental to the entire project, and in principle at least the cumulative effect of both must be assessed in order to comply with the Directive.”
- 84.** This matter was also considered by this Court in *Fitzpatrick v. An Bord Pleanála* [2019] IESC 23, [2019] 3 IR 617. In that case a division of the major computer company, Apple, proposed to establish a data centre at Athenry, Co. Galway. This, however, was the first part of an overall masterplan for the ultimate re-development of that site. Here the question was whether the EAIR was obliged to have regard simply to the proposed data centre or to the wider project.

85. In her judgment for the Court Finlay Geoghegan J answered this question in the negative. She considered that *Ó Grianna* was dependent on a finding of fact that the project for which planning permission had been granted was ([2019] 3 IR 617 at 636) “functionally or legally interdependent on a further development not included in the application for planning permission which might have environmental effects and in respect of which no EIA had been carried out.” By contrast the data centre at issue in *Fitzpatrick* “could be operated as a single data hall” and, in that sense, was a stand-alone project “in the sense of not being functionally dependent on future phases of the masterplan”: [2019] 3 IR 617 at 637.
86. At all events, in contrast to its the position at an earlier stage in these proceedings, An Taisce has now made it clear – at least for the purposes of this appeal – that it accepts that off-site milk production (whether by Glanbia farmers or otherwise) is not part of the project itself. One is accordingly obliged to ask: what do these words in Article 3(1) actually mean in the context of a case such as this and to what extent must the environmental effects of off-site activities be taken account and assessed by an EIA? There would seem to be two possibilities.

The first possible interpretation: an open-ended meaning

87. The first possible interpretation is to say that these words of Article 3(1)(a) of the EIA Directive should be read in an open-ended fashion. In addition to the present case there would appear to be three other decisions of the High Court which have grappled with this issue.
88. In the first of these, *An Taisce v. An Bord Pleanála* [2015] IEHC 633 (“*An Taisce Edenderry*”) the applicant sought to quash a decision of the Board to grant planning permission for the continued use and operation of a previously permitted peat and biomass co-fired power plant in Edenderry, Co. Offaly, on the basis that the environmental effects of extracting the peat fuel source of the thermal power plant were not properly assessed for the purposes of the EIA Directive. In documents submitted as part of the planning application, it was stated that the source of the peat fuel would be from nearby bogs licensed to two notice parties, Bord na Móna Energy Limited and Bord na Móna Allen Peat Limited respectively. The peat itself was transported by a private rail link which was under the exclusive control of Bord na Móna.

89. In his judgment White J determined that he was satisfied that the environmental effects of extracting the peat fuel source from the third party bogs *did* fall within the ambit of “indirect effects” for the purposes of Article 3(1) of the EIA Directive, and were therefore liable to be assessed: see paragraph 73. In reaching this conclusion, White J accepted that “in assessing indirect effects there has to be a limit or the effects will be too remote” (at paragraph 66), but he nonetheless concluded – applying what he described as a functional inter-dependence test – that the Board should not have “excluded completely the consideration of the indirect effects” of the peat extraction from the two bogs. White J found in this respect that the Board had erred in law.
90. Not surprisingly this decision has attracted a good deal of analysis so far as this case is concerned. In her report the Inspector concluded (at paragraph 8.4.2) that the present case was not analogous:
- “The critical difference with the Edenderry Power Plant [case] is that the source of peat was spatially identifiable on selected bog areas with appropriate infrastructure and was therefore inextricably linked to the project as a whole. This is not the case with the Cheese Factory and the expectation that the indirect effects of c 4,500 independent dairy farms suppliers that are removed from the appeal site be assessed should be limited as the effects are too remote.”
91. For my part, I agree that *An Taisce Edenderry* is a special case where the off-site activities were closely inter-twined with the activities on-site such that both had to be considered together. In many ways this case is nonetheless quite close to the facts of a case such as *Ó Grianna, i.e.*, a case where the linkage between the on-site and off-site activities is so close that one cannot realistically be assessed in isolation from the other.
92. A broadly similar approach, albeit with a different outcome, is evident in the judgment of Allen J in *Kemper v. An Bord Pleanála* [2020] IEHC 601. This case concerned the grant of planning permission for the development of a new wastewater treatment plant, as well as various other facilities, at sites in Fingal. The High Court was asked to determine whether the Board had erred in failing to address the impact on the environment of the eventual use of bio-solids and other materials as fertilizer on lands which were not part of the development site (the bio-solids and fertilizer would be an end-product of the wastewater treatment plant). In his judgment Allen J held (at paragraph 377) that, unlike in *An Taisce Edenderry*, it was “impossible to establish a

link between the [Regional Biosolids Storage Facility] and the lands upon which the material may be spread because the lands are not, and cannot be, identified until the purchaser is identified.”

93. Once, however, one moves beyond the facts of special cases such as *An Taisce Edenderry* a range of difficulties open up. The difficulty, however, with such an open-ended interpretation of Article 3(1) is that it does not seem possible to place any *a priori* limit on the range of indirect effects which would have to be assessed for EIA purposes if such an interpretation were to be accepted. A good illustration of these difficulties is provided by the decision of the High Court of England and Wales in *R (Finch) v. Surrey County Council* [2020] EWHC 3566 (Admin).
94. In *Finch* Holgate J considered broadly the same issue that arises here. The proposed development in that case was the retention and expansion of a drilling site which was used for hydrocarbon extraction. The applicant had sought to challenge under the applicable UK regulation (which transposed the EIA Directive) the non-assessment of greenhouse gases that would be emitted when the crude oil produced from the site was used by consumers (typically as a fuel for motor vehicles). The applicant contended that these emissions amounted to indirect effects under the EIA Directive and were therefore liable to be assessed.
95. Holgate J, however, dismissed this argument, taking issue with the applicant and intervener’s interpretation of “indirect effects” as “environmental effects more remote than direct effects (whether in time or location), but not so remote they cannot be attributed to the development at all.” For his part, such an interpretation could not be correct because it meant that a wide range of upstream and downstream effects fell within the ambit of the EIA Directive which could not properly be regarded as effects *of the project or development*: see paragraphs 98-99 and 122 of the judgment.
96. It is, indeed, this connection to the project or development which Holgate J saw as critical to the question of whether an indirect effect falls within the ambit of the EIA Directive or not. In this respect, he considered the “legal test” to be “whether an effect on the environment is an effect of the development for which planning permission is sought” (paragraph 101), which he suggests can be determined by reference to “the *use of land for development and the effects of that use*” (paragraph 112) (emphasis added). Thus, for Holgate J, “indirect effects” are those consequences which are “less

immediate” than direct effects, but which are nevertheless “effects which *the development itself* has on the environment.” (at paragraph 110) (emphasis supplied).

97. Holgate J illustrated his reasoning by reference to two key CJEU decisions on this matter. The first was the CJEU’s judgment in *Abraham* (Case C-2/07, EU: 2008: 113). As he explained (at paragraph 115):

“The project in that case was for the widening of runways at an airport and the construction of a new control tower, runway exits and aprons, to enable the airport to be used more intensively. The issue was whether the EIA was required to assess the effects of the projected increase in the activity of the airport as a result of the modification. It was in that context that the court decided that the environmental effects requiring assessment were not limited to the direct effects of the works to be carried out but also had to include the environmental impact resulting from the use of the improved airport. These overall effects could properly be regarded as effects of the *development*, namely the increased usage of the airport enabled by the works to improve the existing infrastructure.”

98. The second was the CJEU judgment in *Ecologistas en Accion-CODA* (Case C-142/07, EU:C:2008: 445) which concerned the improvement of the Madrid urban ring road and whether the subsequent use of that ring road could be subject to assessment under the EIA Directive as an indirect effect. Holgate J noted that:

“The CJEU decided that the project was liable to EIA, which could not be avoided by being split into sub-projects, and that the impact of the use of the road as altered should be assessed, and not simply the direct effect of the construction work.”

99. The upshot of Holgate J’s analysis of these cases is that they reinforce the view that, first, an EIA must address the environmental effects, both direct and indirect, *of the project or development* for which planning permission is sought – there is no requirement to assess matters which are not environmental effects of the development or project; and second, that an effect of a project or development is one that is “concerned with the use of land for development and the effects of that use.”

100. For my part, save for one possible caveat, I cannot but agree with these conclusions. It seems to me that if Article 3(1) is given a remorselessly literal and open-ended interpretation there is no principled basis by which the limits of any EIAR assessment could confidently be ascertained. On this view, for example, the significant environmental effects resulting from the consumption or use of the end product would – or, at least, might – also have to be assessed. Would this mean, for example, that carbon emissions resulting from the use of articulated lorries to transport the cheese produced by the new factory to their various destinations in continental Europe would also have to be assessed? If – as seems not unlikely – large quantities of plastic were generated for the purposes of wrapping the cheese produced by the proposed factory at issue in the present case, would the environmental effects of this activity also have to be identified and assessed? If this were so, then this might also entail, for example, an environmental assessment of both the circumstances in which the plastic came to be generated in the first place and how it ultimately came to be disposed of following consumption in the second place. These are just representative examples of potential indirect environmental effects in this wider, open-ended sense, examples of which could easily be multiplied.
101. For good measure I would also point to the fact that a similar view was also taken by the Court of Session (Inner House, First Division) in Scotland in *Greenpeace Limited v. The Advocate General* [2021] CSIH 53. The question there was whether the consumption of oil and gas by an end user ought to be assessed as a direct or indirect significant effect of the exploitation of the Vorlich oil field. The Court of Session held that there was no obligation to assess the ultimate use of the finished refined petroleum products as a direct or indirect significant effect of the project. The Court agreed with the conclusion reached by Holgate J in *Finch* that the obligation to assess the direct and indirect significant effects of a project must be limited to the assessment of the ‘effect of the project, and its operation’ and ‘not that of the consumption and of any retailed product ultimately emerging as a result of a refinement of raw material’ (see paragraphs 63-68).

The second possible interpretation: the indirect effects must be those which the development itself has on the environment

102. The alternative interpretation is to opt for the general approach canvassed in the judgment of Holgate J in the *Finch* case (and, for that matter, the Court of Session in *Greenpeace*), *i.e.*, that they must be direct or indirect “effects which the development itself has on the environment.” This means that matters such as the construction of the plant or emissions from the plant etc. must be identified and assessed, but, generally speaking, not matters such as environmental impacts of the inputs (*e.g.*, milk production) or outputs of the factory (*e.g.*, the environmental consequence of the plastic wrapping of the cheese). This brings me to my caveat in respect of Holgate J’s analysis in *Finch*. There may well, however, be special and unusual cases where the causal connection between certain off-site activities and the operation and construction of the project itself is demonstrably strong and unbreakable. In those special and particular cases the significant indirect environmental effects of these off-site activities would fall to be identified and assessed and, for all the reasons I have already stated, cases such as *Edenderry* and *Ó Grianna* fall into this category.

Choosing as between the two options

103. The difficulty with the first interpretation of Article 3(1) is precisely that it is open-ended . Such an open-ended interpretation of these words leads, however, to conclusions which are not practicable or feasible. In the present case, for instance, it is simply not possible to audit or assess the 4,500 Glanbia farms – which, it may be useful to remind ourselves, are all independently owned and operated – not to speak of the range of other non-Glanbia farmers who may be tempted to enhance their milk production to non-Glanbia producers if Glanbia switch 20% of their existing production away from those producers in the light of the operation of the new factory in the manner I have already described.
104. Besides, were such an open-ended test to be adopted, then in principle there would be few limits to the range of possible inquiry to which those tasked with preparing an EAIR would be put. When pressed on the point during the course of argument, counsel for An Taisce, Mr. Steen SC, was really unable to offer any test by which the limits of this could be ascertained: if the indirect environmental effects of the inputs should properly be assessed, the same might be said of the indirect environmental effects of the outputs, including questions such as the indirect effects of their transportation of the cheese products to market and the end use of these products by customers.

- 105.** In some ways, therefore, to adopt the famous words of Holmes J., I see “hardly any limits but the sky” if such an open-ended interpretation of the Directive were to be adopted: see *Baldwin v. Missouri* 281 US 586 at 595 (1931). It is the fact that such an open-ended interpretation of Article 3(1) would lead to the imposition of an impossibly onerous and unworkable obligation on developers preparing an EIAR that leads me to the conclusion that this interpretation should be rejected.
- 106.** This is underscored by the language of Article 5(1) of the EIA Directive which describes the nature of the information to be included in the EIAR itself. Thus, for example, Article 5(1)(a) requires that the developer provide a description “of the project comprising information on the site, design, size and other relevant features of the project” and Article 5(1)(f) likewise requires that the developer shall include “any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project, and to the environmental features likely to be affected.” In a similar vein, paragraph 1(c) of Annex IV, describing the information to be set out in the EIAR, requests: “A description of the main characteristics of the production processes, operational phase of the project (in particular any production process), for instance, energy demand and energy used, the nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used.” All of these provisions strongly suggest that the information to be supplied must be firmly tethered to the project itself, so that the indirect significant effects to be assessed must be intrinsic to the construction and operation of the project.
- 107.** The alternative interpretation, therefore, seems to me to be the one best suited to the particular circumstances of this case. Important as the EIA Directive undoubtedly is, it was ultimately designed to assist in identifying and assessing the direct and indirect significant environmental effects of a specific project, including (post-2014) the climate change effects of such a project. Yet the proper scope of the EIA Directive should not be artificially expanded beyond this remit and, in particular, it should not, so to speak, be conscripted into the general fight against climate change by being made to do the work of other legislative measures such as the 2021 Act. In this respect, I agree with Humphreys J that these wider indirect environmental consequences of milk production and the dairy sector must really be assessed at a programmatic level by national or sectoral measures in the manner provided for by s. 5 of the 2021 Act.

108. Summing up on this issue, therefore, I take the view that the Board and the Inspector were entitled to find on the evidence that the existing and projected Glanbia milk pool was sufficient to cater for the needs of this factory. To that extent, therefore, it seems at least implicit in the findings of the Board (and the Inspector) that the proposed factory would not have any significant indirect environmental effects, precisely because – as both found – this milk was going to be produced *in any event* by Glanbia farmers and any additional agricultural emissions which might thereby result had already been identified and assessed. In these circumstances, it follows that there will be, in fact, no significant indirect environmental effects as a result of the construction and operation of the factory by reason of the Glanbia milk production.
109. At the same time, it should be acknowledged that having regard to basic economic principles relating to supply and demand, this project is likely nonetheless to strengthen the overall *demand* for milk production, precisely because the 20% of the existing Glanbia milk pool which is currently sold on to other producers will be switched to meet the demands for the new factory. This in turn may well create a market vacuum which will ultimately be catered for by non-Glanbia producers and farmers who may perhaps be tempted to increase their own milk production as a result. Any such assessment must, of course, also be tempered by reason of the other evidence which shows that in any event a yearly 1.5% increase in milk supply is projected by reason of enhanced productivity on the part of all farmers, whether Glanbia suppliers or otherwise.
110. One may thus observe that, viewed from an economic level, any enhanced milk production in the State which follows in the years to come is likely not to be entirely independent of the operation of the factory. Beyond this, however, proof of causality such would satisfy the requirements of the EIA in respect of “direct and or indirect significant environmental effects” remains entirely elusive, contingent and speculative. Its very elusiveness means that it is incapable of measurement or assessment and, hence, cannot be the sort of significant indirect environment effect which Article 3(1) of the Directive must be taken necessarily to contemplate. In these circumstances the present case must be judged to be at the opposite end of the “indirect environmental effects” spectrum when compared with cases such as *An Taisce Edenderry* and *Ó Grianna*.

111. While it is true that this wider economic analysis does not feature in either the EAIR or the Inspector’s report or the Board’s findings, this, in my view, is irrelevant because any environmental effects which thereby result from the strengthening of the overall demand for milk production cannot be said in any realistic interpretation of this phrase to amount to “indirect significant environmental effects” of this project within the meaning of Article 3(1). This is not to deny the existence of these potential effects or to downplay their significance. Still less is it to say that these effects should not be measured or assessed having regard to the long-term commitments to a carbon-neutral society manifested in the 2021 Act. It is rather that these effects are so remote from the present project that they cannot realistically be regarded as falling within the scope of Article 3(1).
112. For these reasons I would reject the challenge to the adequacy of the EAIR in the present case and affirm the decision of the High Court in that respect.

Part V: Appropriate Assessment and the Habitats Directive

113. I now propose to consider the issue of the Habitats Directive (Directive 92/43 EEC of 21 May 1992) and, specifically, whether the Appropriate Assessment (“AA”) required under Article 6(3) of that Directive was satisfactory for this purpose. The requirements of Article 6(3) have been transposed into national law by the provisions of Part XAB of the 2000 Act in general and by s. 177U and s. 177V in particular. Once again, no issue of the transposition of the Habitats Directive arises so far as the present appeal is concerned.
114. The challenge presented by An Taisce under this heading is in many respects – although admittedly not all – similar to that advanced with respect to the EIA, specifically with regard to the potential impact on the various Natura sites by the adverse effects of milk production in the approximately 4,500 Glanbia farms. I propose presently to consider the separate grounds of objection raised by An Taisce but before doing so it is appropriate to say something about the specific nature of the obligations imposed on the national authorities by Article 6(3) of the Habitats Directive.

The obligations imposed on national authorities by Article 6(3) of the Habitats Directive

115. The obligation for an AA arising under Article 6(3) is in respect of a “plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon”. Such a plan or project must then be subject “to appropriate assessment of its implications for the site in view of the site’s conservation objectives.” One must, of course, stress that the project in the present case which requires the AA is the cheese factory itself and not the 4,500 Glanbia farms or, for that matter, those non-Glanbia farms which may be tempted to increase their milk production as a result of the switching of a large volume of Glanbia milk into meeting the proposed factory’s requirements.

116. The general test in this regard is that articulated by the Court of Justice in *Sweetman* (Case C-258/11, EU:C: 2013: 220) (at paragraph 44 of the judgment):

“So far as concerns the assessment carried out under Article 6(3) of the Habitats Directive, it should be pointed out that it cannot have *lacunae* and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effect of the works proposed on the protected site. It is for the national court to establish whether the assessment of the implications for the site meets these requirements.”

117. The practical implications of this for the functioning of the Board were well articulated by Finlay Geoghegan J in *Kelly v. An Bord Pleanála* [2014] IEHC 400 when she said (at paragraph 48 of the judgment):

“In accordance with the CJEU decision in *Sweetman*, it is for the national court to determine whether the appropriate assessment (including the determination) was lawfully carried out or reached, and to do so, it appears to me that the reasons given for the Board’s determination in an appropriate assessment must include the complete, precise and definitive findings and conclusions relied upon by the Board as the basis for its determination. They must also include the main rationale or reason for which the Board considered those findings and conclusions capable of removing all scientific doubt as to the effects of the proposed development on the European site concerned in the light of its conservation objectives. In the absence of such reasons, it would not be possible for a court to decide whether the appropriate assessment was lawfully concluded

or whether the determination meets the legal test required by the judgments of the CJEU.”

118. Finlay Geoghegan J went on to point out (at paragraph 49) that the statutory obligation to carry out an AA in accordance with Article 6(3) of the Habitats Directive is one which went to the jurisdiction of the Board and, in contrast to the situation regarding the grant of planning permission, was not one which involved a purely discretionary judgment and assessment by that body.

119. Finlay Geoghegan J then held that an appropriate AA had not, in fact, been carried out by the Board in respect of the proposed windfarm. She noted, for example, (at paragraph 80) that:

“In relation to the potential hydrological/hydrogeological impacts of the construction of the proposed development on Natura 2000 wetlands systems in the vicinity of the site, and in particular, certain turloughs, the Board has not conducted any assessment which includes complete and precise findings and conclusions capable of removing all reasonable scientific doubt as to the effect of the works proposed on the habitat of the Natura 2000 sites in the light of its conservation objectives, having regard, in particular, to the potential indirect effects and lacunae in the information supplied identified by its own Inspector.”

120. This point was also made by Clarke CJ in his judgment for this Court in *Connelly v. An Bord Pleanála* [2018] IESC 31 (at paragraphs 8.15 and 8.16); [2018] 2 ILRM 453 at 472):

“Thus, it seems to me as a result of the foregoing analysis that the overall conclusion which must be reached before the Board has jurisdiction to grant a planning consent after an AA is that all scientific doubt about the potential adverse effects on the sensitive area have been removed. However, there seems, as a matter of EU law, to be a separate obligation to make specific scientific findings which allow that conclusion to be reached. This is apparent from the above passages from *Kelly* and the European case law therein cited.

The analysis in *Kelly* shows that there are four distinct requirements which must be satisfied for a valid AA decision which is a necessary pre-condition to a planning consent where an AA is required. First, the AA must identify, in the

light of the best scientific knowledge in the field, all aspects of the development project which can, by itself or in combination with other plans or projects, affect the European site in the light of its conservation objectives. Second, there must be complete, precise and definitive findings and conclusions regarding the previously identified potential effects on any relevant European site. Third, on the basis of those findings and conclusions, the Board must be able to determine that no scientific doubt remains as to the absence of the identified potential effects. Fourth and finally, where the preceding requirements are satisfied, the Board may determine that the proposed development will not adversely affect the integrity of any relevant European site.”

- 121.** As the decision in *Kelly* itself illustrates this does not *as such* mean that an applicant for judicial review is *obliged* to adduce scientific evidence challenging aspects of the developer’s NIS or, for that matter, the assessment carried out by the Board’s Inspector. While the *legal* burden of demonstrating the invalidity of any grant of planning permission in cases arising under the Habitats Directive will always rest with the applicant, it is clear from the Court of Justice’s decision in *Sweetman* that the *evidential* burden rests with the Board to demonstrate that it has conducted an AA which meets the requirements of Article 6(3). This point was, in any event, confirmed by the judgment of Finlay Geoghegan J in *Kelly* and by that of Clarke C.J. in *Connelly*.
- 122.** This issue arose in the High Court following the first judgment. In that first judgment Humphreys J stated (at paragraph 26):
- “In the present case the main consequence of not having pursued the point in the planning process is that there was no scientific evidence put before the board to contradict the Natura Impact Statement. Consequently, it cannot be maintained now that the board acted in a way which left open scientific doubt when there was no such doubt on the materials which it had.”
- 123.** This point was, however, clarified by Humphreys J in the second judgment in which he refused to grant the appropriate certificate under s. 50A(7) of the 2000 Act where he stated (at paragraph 5):
- “That does not mean that no applicant who does not produce its own evidence can challenge a Natura Impact Statement (NIS). It just means that this particular

applicant cannot because there was not otherwise before the board any “materials which it had” that left open scientific doubt. Those materials could include materials put before the board by the developer and by other parties. For the avoidance of doubt, the board is not obliged to accept an NIS simply because it is uncontradicted. The NIS could have inherent flaws on its face, but I didn’t expressly say that at para. 26 of the No. 1 judgment because that was not demonstrated here and, therefore, was not relevant. You can’t cover everything.”

124. I respectfully agree with the analysis of both Finlay Geoghegan J in *Kelly* and that of Humphreys J as expressed in the second judgment in this case. For my part I consider that such an analysis flows from the requirements of Article 6(3) as interpreted by the Court of Justice in *Sweetman*. This being so we can now turn to the question of considering whether an appropriate assessment was carried out in the present case.
125. The evidence which was before the Board consisted principally of the Natura Impact Statement (“NIS”) dated September 2019, the appeal lodged by An Taisce against the grant of planning permission, the responses of the parties and the report of the Inspector.
126. It is first necessary by Article 6(3) of the Habitats Directive to conduct a screening process and to identify the special areas of conservation (“SAC”) which would be potentially affected by the proposed development. While the actual Slieverue site is not itself situate on an SAC, the NIS identified a range of SACs within the 15km of that site. Two sites in particular – the Lower River Suir SAC and the River Barrow and River Nore SAC – are located within 3km of the boundary of the Slieverue site and the Inspector found (at paragraph 12.4) that “given the current hydrological connection between the site and the Lower River Suir SAC and the River Barrow and River Nore SAC further consideration will be given to these Natura 2000 sites to assess potential adverse effects resulting from the proposed development.” For similar reasons, the Inspector concluded (at paragraph 12.3) that in view of considerations of distance, the lack of hydrological connectivity and the lack of impact pathways, a range of other sites (e.g., the Tramore Back Strand SPA) “have been screened out from further consideration.”
127. In its direction of 25th June 2020 the Board agreed with this conclusion, saying that “the only European sites in respect of which the proposed development has the potential to

have a significant effect are the Lower River Suir SAC (002137) and the River Barrow and River Nore SAC (002162).” No issue, therefore, arises in relation to Stage 1 of the appropriate assessment.

- 128.** As far as the Stage 2 part of the process is concerned, the Inspector set out in detail the various Qualifying Interests of the two sites concerned. Thus, for example, she identified that the site specific objectives of the Lower River Suir site included maintaining the favourable conservation condition of species such as otter while restoring the favourable conservation condition of Atlantic salt meadows (which are salt-tolerant plants which grow close to tidal estuaries), various species of lampreys (which are eel-like fish) and salmon.
- 129.** The Inspector then went on to assess the potential impairment of water quality during the construction phase (at paragraphs 12.22 *et seq.*) before concluding (at paragraph 12.26) that the implementation of the mitigation measures which she proposed would not “have any adverse effects on water quality” within these two river SACs “or species for which they are designated.”
- 130.** The Inspector next conducted an analysis of the potential impairment of water quality during the operation phase (at paragraphs 12.27 *et seq.*) arising from the adverse effects of treated process effluent. She considered that these effects could be avoided by a range of measures which she then identified in relation to both the surface water and process water discharge. A key part of this was that there would be a dedicated pipe which would connect with an Irish Water outfall pipe. The combined effluent would then be treated and would discharge into the Lower River Suir. The Inspector then concluded (at paragraph 12.27):

“Average discharge from the proposed development will amount to >0.09% of the average flow of the Lower River Suir. Based on this flow, together with the [best available technology] limits, which will be applied to the discharge from the proposed development...it can be concluded that the treated process effluent will not have an adverse impact on the water quality in the Lower River Suir [SAC] or the River Barrow & River Nore SAC or species for which they are designated.”

- 131.** The Inspector then turned to the question of the potential indirect implications on these two Natura sites from the operation of the milk production. She concluded (at paragraphs 12.28 to 12.30) as follows:

“In order to combat adverse effects within the dairy farming milk supply sector, Glanbia is committed to sustainable milk production and has an active Sustainability and Quality Assurance Programme, which is in line with Bord Bia Sustainable Dairy Assurance Scheme (SDAS). The areas of biodiversity and ecology which are considered at farm level assessments include land management, environmental care and carbon footprint, quality and conservation of water, animal health, welfare and biosecurity and the data storage and the responsible use of medicines, pesticides, anthelmintics and other chemicals. Glanbia Ireland is also a supporting partner of the BRIDE (Biodiversity Regeneration in a Dairying Environment) project which aims to design and implement a results based approach to conserve, enhance and restore habitats in lowland intensive farmland. All farms are subject to environmental controls, including controls in the Wildlife Acts and the Habitats and Birds Directive which ensure that they do not significantly adversely affect the integrity of European and other protected sites and so as to ensure the protection of protected species.

The planning application provides a sufficient level of information surrounding the source of milk/milk supply in order to allow for the assessment of the associated indirect impacts to the required extent. There is no evidence of potential for direct habitat loss or fragmentation within designated areas associated with the project or for significant effects on the conservation objectives of any Natura 2000 [SACs].

While it is not practicable to assess potential indirect effects on all Natura sites, it can be concluded in general terms that the continued implementation of the above mentioned programmes and mitigation measures on dairy farms that will supply milk to the proposed development will mitigate potential indirect adverse effects on Natura 2000 sites.”

132. This matter was then considered by the Board in its direction of 25th June 2020 who then concluded:

“...the Board considered that the information before it was adequate to allow the carrying out of an appropriate assessment. In completing the appropriate assessment, the Board considered, in particular, the following:

- (a) the likely direct and indirect impacts arising from the development of the proposed development, both individually, when taken together and in conjunction with other plans or projects;
- (b) the mitigation measures, which are included as part of the current proposal, and
- (c) the conservation objectives for the European sites.

In completing the appropriate assessment, the Board accepted and adopted the appropriate assessment carried out in the Inspector’s report in respect of the potential effects of the proposed development on the aforementioned European sites, having regard to the sites’ Conservation Objectives. In overall conclusion the Board was satisfied that the proposed development, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European Sites, in view of the sites’ Conservation Objectives.”

133. Having considered the appropriate assessment that was carried out in the present case, we may now turn to the three specific grounds of objection raised by An Taisce to the appropriate assessment.

Objection 1: The potential impacts on Atlantic Salt Meadows

134. The first objection is that neither the Board nor the Inspector recorded any conclusion in respect of the potential impacts on Atlantic salt meadows, whether by reason of the operation of the milk supply production or the operation of the factory or both. There is an associated objection to the effect that in the absence of any conclusion, it was unclear whether reliance was placed on mitigation measures to screen out potential impacts on Qualifying Interests such as Atlantic salt meadows. If there was such

reliance, this was said to be contrary to the effect of the decision of the Court of Justice in *People over Wind* (Case C-323/17, EU:C: 2018: 244).

135. In *People over Wind* the Court of Justice held (at paragraph 40) that Article 6(3) of the Habitats Directive precluded the taking into account at the Stage 1 screening stage “of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.” It is, however, perfectly clear that this did not happen in the present case.
136. The Board and the Inspector both referred with approval to the NIS and its associated Tables. Table 6.1 contained in Annex 1 to the NIS addresses the rationale as to why Atlantic salt meadows were screened out:

“Although the confirmed Atlantic salt meadows occurs ca. 1.2km upstream of the Application Boundary, the potential Atlantic salt meadow is located ca. 40m. south of the Application Boundary. Treated effluent will be piped from the proposed development directly into the existing [Irish Water] outfall, from where it will discharge directly into the Lower River Suir. The increased flowrate will not result in adverse effects to the potential Atlantic salt meadow due to the fact the existing IW discharge pipe is located over 130m. from the nearest potential Atlantic salt meadow and is discharging into an estuarine environment which is a highly dynamic environment. Therefore, this habitat will not be affected. No further assessment is required.”
137. It is thus clear that the only scientific evidence before the Board was that any fluvial discharges from the proposed development would be discharged from a site more than 130m from the nearest Atlantic salt meadow and that this habitat *would not be affected*. It follows that there was no question of any reliance on mitigation measures in order to reach this particular Stage 1 “screening out” conclusion in a manner which would engage the *People over Wind* principle.
138. This conclusion also addresses the objection that neither the Board nor the Inspector addressed the potential implications of the plant for Atlantic salt meadows, since it is plain that they both did so, courtesy of Table 6.1 in Annex 1 of the NIS.
139. It may be convenient when dealing with the next objection if I deal with the implications of the milk supply production issue.

Objection 2: No assessment of the effects of the milk supply production

140. It is true that the NIS did not in terms analyse the impact on the Natura sites of the potential impact of milk production from the individual 4,500 Glanbia farms: see paragraph 7.3 of the NIS. The authors of the NIS evidently adopted this stance because while they concluded that it was not practicable “to assess potential indirect effects on all Natura sites”, they nonetheless took the view that:

“in general terms the continued implementation of the [Glanbia organised farm environmental] programmes and mitigation measures on dairy farms that will supply milk to the proposed development will mitigate potential indirect adverse effects on Natura 2000 sites.”

141. The Inspector took a similar view, saying (at paragraph 12.29 and paragraph 12.30):

“The planning application provides a sufficient level of information surrounding the source of milk/milk supply to allow for the assessment of the indirect impacts to the required extent. There is no evidence of potential for direct habitat loss or fragmentation within designated areas associated with the project or for significant effects on the conservation objectives of any Natura 2000 [site].

While it is not practicable to assess potential indirect effects on all Natura sites, it can be concluded in general terms that the continued implementation of the above mentioned programmes and mitigation measures on dairy farms that will supply milk to the proposed development will mitigate potential indirect adverse effects on Natura 2000 sites.”

142. While it is true that the NIS, the Inspector and the Board all sought to some extent to assess the potential indirect effects of the milk production on the Natura sites, I consider that the short answer to this point is that they were not, as a matter of law, obliged to do so. To repeat, the project to be assessed for the purposes of Article 6(3) was the construction and operation of the cheese factory and *not* the 4,500 Glanbia farms or, for that matter, the thousands of other farms supplying non-Glanbia producers.

Objection 3: The appropriate analysis did not comply with the requirements in *Kelly*.

143. Here again the objection is that the NIS did not address the potential environmental impacts of milk production at the specific farm level. Yet again, however, it is necessary to stress in response that quite apart from the fact that any obligation to conduct an appropriate assessment of these 4,500 farms would have been completely unrealistic and impractical, the language of Article 6(3) is particularly clear in that the assessment is tied to the project itself, as distinct from the inputs to the project.
144. In this regard it may be recalled that in *Kelly* Finlay Geoghegan J. addressed herself the Article 6(3) implications of the windfarm project which was at issue in that case. She noted that the scientific evidence before the Board had clearly identified matters arising from the construction and operation of the windfarm project which impacted on the integrity of a nearby Natura site (such as, for example, the potential impact on the water fowl and waders by reason of the disturbance of feeding/roosting/commuting area and interference with natural flight lines and potential bird strikes). There was, moreover, no evidence that the Board had conducted any analysis of this issue itself in circumstances where it had disagreed with the findings of its own inspectors.
145. The key point, however, is that this judgment proceeds on the basis that the project was the construction and operation of the windfarm itself. By the same token the obligation on the Board in the present case was to ensure that the environmental effects of the construction and operation of the cheese factory on the two nearby SAC sites that might be affected were appropriately assessed. This, I consider, it has done for all the reasons I have just set out.
146. For these reasons, therefore, I would reject the contention that the Board did not comply with the requirements of Article 6(3) of the Habitats Directive in granting permission for this site.

Part VI: Arguments based on the Water Framework Directive

147. I now turn to consider the arguments advanced by reference to the Water Framework Directive (“WFD”) of 23rd October 2000 (Directive 2000/60/EC). I propose to consider these arguments on their own merits, even though I am conscious of the fact that both

the Board and Glanbia contend that at least some of these issues were never pleaded and properly fall outside the scope of the proceedings. It is equally unnecessary to decide whether An Taisce can raise these points even though they were never raised during the course of the planning process before either Kilkenny County Council or before the Board. Adopting the same approach as Humphreys J did in the High Court, I will assume in An Taisce's favour that it can do so.

- 148.** The essence of the case advanced by An Taisce under this heading is two-fold. First, it contends, relying on the judgment of the Court of Justice in *Bund für Umwelt und Naturschutz Deutschland eV ("Weser")* (Case C-461/13, EU:C: 2015: 433) that the Board was precluded by Article 4(1) of the WFD from granting permission for the cheese factory. In *Weser* the Court of Justice held that, absent a derogation for this purpose, Member States were precluded from granting authorisation for a particular project where it may cause a deterioration of the status of a body of surface water. The argument here is that the discharges from the cheese factory in the present case would introduce additional pollutants into the river in circumstances where that waterbody had not achieved "good" status for the purposes of Article 28 of the Surface Water Regulations 2009 (SI No. 272 of 2009).
- 149.** It is clear, however, from Table 6.1, Annex 1 of the NIS that these discharges will be into the lower River Suir via an Irish Water outfall pipe which itself is located a few hundred metres from the southern boundary of the factory site. It is not, however, in dispute but that the status of the lower River Suir during this period was "good". There was accordingly no impediment on *Weser* grounds by reference to Article 4(1)(a) of the WFD to the Board granting permission.
- 150.** The second argument is a variant of a consistent theme running through this entire appeal, namely, that the projected enhanced milk production from Glanbia farms should be regarded as part of a wider project for which development consent has been sought. In other words, it contends that as such enhanced milk production is likely in turn to lead to greater discharges into the various watercourses either on or adjacent to the 4,500 farms that currently supply Glanbia with milk, this was a factor which should at least have informed the Board's thinking having regard to Article 4(1)(a) of the WFD prior to the grant of planning permission for the site.

151. As it happens the term “project” is not even used in the WFD itself. In *Weser*, however, the Court of Justice reasoned that the general obligations devolved on Member States by Article 4(1)(a) to ensure that there was no deterioration in water quality precluded the grant of development consent where it would have the effect of compromising the water quality in question. These comments were, however, made in the context of the grant of three separate development consents for the development of a specific project, namely, the construction of a navigable channel from the River Weser from inland at Brake to the high seas beyond Bremerhaven.
152. In the present case the nature of the project is clear in that it refers to the construction and operation of the cheese factory. It would, with respect, be entirely unrealistic to say that the principles in *Weser* could be applied beyond the confines of anticipated discharges from the factory (whether in the course of construction or its operation) into watercourses. As it happens, the approximately 4,500 Glanbia supplier farms are dispersed throughout the counties of the south-east and south Leinster areas generally. The evidence was that approximately 75% of these farms have watercourses on their lands and, in any event, one may fairly surmise that virtually all of these farms lie proximate to streams, rivers and lakes. The suggestion that the Board should consider and examine discharges from each of these 4,500 farms in order to ascertain compliance with the requirements of Article 4(1)(a) of the WFD prior to granting planning permission in the present case is, again with great respect, simply divorced from reality.
153. That, of course, is not for a moment to suggest that polluting discharges from individual farms into watercourses (whether into watercourses on their lands or adjacent thereto) is not of importance. It is rather to say that these are matters which fall to be considered separately from the grant of planning permission in respect of this cheese factory. They do not fall to be considered in this context because the supply from these farms is not part of the project which is the subject of this application for planning permission.
154. It follows, therefore, that for these reasons I would reject the appeal so far as it concerns alleged non-compliance with the requirements of the WFD.

**Part VII: Whether to make an Article 267 TFEU reference
to the Court of Justice**

155. An Taisce have pressed this Court, if necessary, to make a reference to the Court of Justice concerning the interpretation of Article 3(1) of the EIA Directive so far as it concerns the meaning in particular of the words “the indirect significant effects of a project.” This Court is, of course, a court of last resort for the purposes of Article 267(3) TFEU. Accordingly, in view of the recent decision of the Court of Justice in *Consorzio Italian Management* (Case C-561/19, EU:C: 2021: 799) and the comments of that Court (at paragraph 51 of the judgment) regarding the nature of the obligation to refer which is imposed on courts of last resort, it is appropriate to record why I did not think it necessary to make a reference of any question of the interpretation of EU law to that Court.
156. It is true that the Court of Justice has not had to pronounce on the proper interpretation of the “significant indirect effects” aspect of Article 3(1) of the EIA Directive. There may indeed be instances of where a court of last resort might feel called upon to make an Article 267 reference on this very point, but I do not consider that the present case is really one of them. The difficulty here is that no acute point of interpretation is really presented by this appeal: it really shades into issues of fact and the application of established principles of EU law. If there were two possible conflicting *a priori* interpretations of Article 3(1) the Directive the resolution of which could guide this Court and assist in the disposition of this appeal, it would, of course, be a different matter. Yet none have presented themselves, whether for the purposes of this appeal or, for that matter, in the course of the earlier case-law.
157. For those reasons I consider that the present appeal in substance concerns the application of EU law, rather than any question of interpretation as such. It is for this reason that I consider that no Article 267 TFEU reference is, in fact, necessary.

Part VIII: Overall conclusions

158. In summary, therefore, for the reasons stated, I would dismiss the appeal of An Taisce and uphold the decision of Humphreys J. in the High Court.

Part IX: Costs

159. As this judgment is being delivered electronically, it may be convenient if, for the assistance of the parties, I should here express a provisional view on the issue of costs.

Although An Taisce has lost its appeal and its challenge to the grant of planning permission in respect of the factory has been dismissed, it has nevertheless raised important and practical issues regarding the development consent process. In these circumstances, and quite independently of any arguments that may arise in relation to either s. 50B of the 2000 Act or, for that matter, ss. 3 and 4 of the Environment (Miscellaneous Provisions) Act 2011, I consider that it would be appropriate that each side would abide its own costs. (The Attorney General has, in any event, agreed to abide his own costs).

- 160.** The parties are, of course, free to dispute this provisional view. If, however, any party wishes to contend for a different costs order, they should inform the Supreme Court Office within fourteen days of the delivery of this judgment.

Appendix 3: CC 3.2 Carbon Budget Delivery Plan



HM Government

Carbon Budget Delivery Plan

March 2023

HC 1269



HM Government

Carbon Budget Delivery Plan

Presented to Parliament pursuant to details of the Climate Change Act (2008)
Section 14

Ordered by the House of Commons to be printed 30 March 2023

HC 1269



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Introduction

1. This Carbon Budget Delivery Plan - which also serves as our “section 14” report under the Climate Change Act 2008 - is being published to inform Parliament and the public on the government's proposals and policies to enable carbon budgets to be met.
2. The approach set out in our October 2021 plan to deliver net zero, the Net Zero Strategy, remains the right one. The independent Net Zero Review led by Chris Skidmore MP supported this position. The Net Zero Growth Plan and the Energy Security Plan, published alongside this report, provide an update to the 2021 Net Zero Strategy and sets out the government’s strategy to achieve net zero and to deliver energy security, while at the same time increasing the UK’s international economic competitiveness.
3. This Carbon Budget Delivery Plan provides the detail, setting out the current package of proposals and policies prepared by the Secretary of State (as of March 2023) to enable the delivery of Carbon Budgets 4, 5 and 6. The proposals and policies reach far into the future, setting out our plans to the end of Carbon Budget 6 in 2037. This means that, whilst maintaining focus on delivering the proposals and policies, we must acknowledge that the package represents one of many routes to full decarbonisation of the UK economy by 2050. We expect the world to change between now and the end of Carbon Budget 6, so we expect that the package of proposals and policies will evolve to adapt to changing circumstances, new evidence, to utilise technological developments and address emerging challenges. This will enable us to maximise opportunities to drive growth, jobs and investment across the UK whilst reducing emissions.
4. In light of this, and consistent with the duties imposed by the Climate Change Act 2008, we will continue to keep the proposals and policies under review and update and amend the package as appropriate. It is an extremely difficult process to precisely forecast those proposals and policies that will be in effect so far in the future, for example those intended to take effect in Carbon Budget 6, and there is considerable fluidity in the final delivery. We expect to provide periodic updates over time.
5. The carbon budgets apply to the whole of the UK economy and society. In preparing this package of proposals and policies, we have consulted with Devolved Administrations who we continue to work with to deliver our UK-wide carbon budgets.

Background

Climate Change Act and carbon budgets

6. Parliament passed the Climate Change Act 2008 ('the Act'), legislating the UK's framework for setting carbon budgets. Under the Act, the UK is legally required to reduce greenhouse gas emissions by at least 100 per cent by 2050 on 1990 levels. In 2019, on advice of the Climate Change Committee ('CCC'), the UK committed to reaching net zero emissions by 2050 and consequently the target reduction in the Act was amended (prior to this the target was at least 80 per cent reduction on 1990 levels). To keep the UK on a pathway to achieving the 2050 target, the government is required to set legally binding, five-year caps on emissions – carbon budgets – twelve years in advance and then to publish a report setting out proposals and policies for meeting that budget and those budgets previously set.
7. The Act also established the Committee on Climate Change, now the Climate Change Committee (CCC), an independent statutory body, to advise the government and the Devolved Administrations on setting and meeting carbon goals. The CCC advises the government on the level of each budget, the respective contributions that different sectors could make and the extent to which carbon budgets could be met through the use of permitted "flexibilities" (such as surpluses from previous carbon budgets or the purchase of good quality international carbon credits).
8. Six carbon budgets have been set to date, covering 2008 to 2037. Carbon Budget 6, the first to be set under the UK's new net zero target, was legislated for in June 2021. The UK has already met, and overachieved, its first (2008-2012) and second (2013-2017) carbon budgets and is on track to meet the third (2018-2022). Between 1990 and 2021, UK emissions fell by 48% while our economy grew by 65%, decarbonising faster than any other G7 country.
9. This Carbon Budget Delivery Plan is the means by which we satisfy section 14 of the Act to publish a package of proposals and policies for enabling Carbon Budgets 4, 5 and 6 to be met.
10. To demonstrate how we will enable our legislated carbon budgets up to and including Carbon Budget 6 to be met, this report sets out the package of proposals and policies and their anticipated emissions reductions (where quantified) to 2037. As required by the Act, it also sets out the timescales over which we expect those proposals and policies to take effect.

Meeting carbon budgets

Baseline and savings required

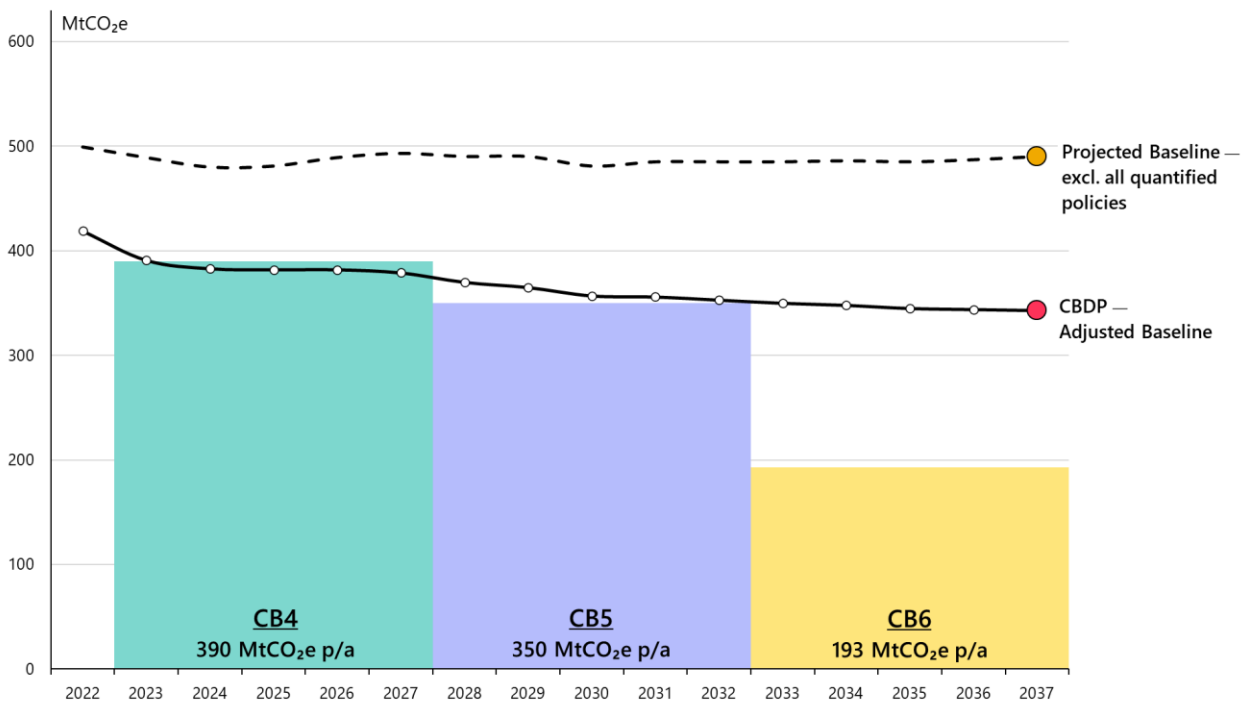
11. To determine the total additional emissions reductions required to enable carbon budgets to be met we take an adjusted version of the government Energy and Emissions Projections (EEP 2021-2040) as a “baseline” for future emissions and compare this to the legislated carbon budget levels.¹
12. EEP 2021-2040 is based on assumptions of future economic growth, fossil fuel prices, electricity generation costs, UK population and other key variables. They also incorporate EEP policies that have already been implemented, adopted or planned as of January 2022 (July 2022 for power sectors).² The Technical Annex includes further detail on the latest 2021-40 Energy and Emissions Projections.
13. The current package of proposals and policies to enable Carbon Budgets to be met comprises the policies already incorporated in EEP 2021-2040, as well as the yet to be implemented, adopted or planned proposals and policies that will be needed to deliver emissions savings up to CB6. Table 4 in Appendix B sets out the full list of policies currently included in EEP 2021-2040 and Tables 5 and 6 in the same appendix set out the list of additional proposals and policies.
14. The policies set out in EEP 2021-2040 show the excellent progress that the UK has already made towards meeting our carbon targets. From the Projected baseline, EEP policies alone are expected to deliver over 100% of the emissions savings needed for Carbon Budget 4, and over 40% of the savings required for Carbon Budget 6, compared to projections with no government policy included (see Chart 1).
15. The latest EEP 2021-2040 was published in 2022, with the next update expected in the autumn 2023. However, recent changes in the greenhouse gas inventory and underlying trends in some areas have affected baseline emissions. For the purposes of this report, we have made adjustments to the EEP 2021-2040 baseline to reflect these. When making the adjustments we have taken a conservative approach, resulting in a higher baseline than the EEP 2021-2040 baseline by 4Mt amount in CB6. More detail on baseline adjustments is set out in the Technical Annex to this report.

¹ UK Government, Energy and emissions projections: 2021 to 2040. Available at <https://www.gov.uk/government/publications/energy-and-emissions-projections-2021-to-2040>

² Note this equates to the UNFCCC international reporting scenario “With Additional Measures” (WAM), which includes Existing and Planned policies.

16. The difference between the adjusted baseline and the carbon budget for that period represents the level of emissions savings required to meet the target - this is the reduction in emissions we are trying to achieve through the proposals and policies laid out later in this document (Appendix B). When the total quantified savings for a given carbon budget are discussed as a percentage, this percentage relates to the gap between the baseline and the carbon budget.
17. After the baseline adjustments have been made, we project that CB4 could already be met with 7Mt p.a of headroom. The amount of savings required from further proposals and policies to meet CB5 and CB6 are 9Mt p.a and 199Mt p.a, respectively.

Chart 1 – emission savings baseline with no EEP policies, CBDP adjusted baseline including EEP policies and Carbon Budget targets.



Note: Baselines exclude International Aviation & Shipping.

Energy & Emissions Projections, 2022 • Dept. DESNZ internal analysis, 2023.

Projected emissions against current and future carbon budgets

18. Table 1 shows the expected performance against Carbon Budgets 4, 5 and 6 targets. For each carbon budget, the savings from new and early-stage proposals and policies are subtracted from the baseline to produce a figure for residual emissions. This is then compared to the 'budget limit' to establish expected total quantified performance. Where there is a positive figure in this last row of the table, it indicates that we expect to have reduced emissions beyond the level required by the budget; and where this is negative, it indicates

that further emissions savings will be required to meet the budget. Unquantified proposals and policies that will contribute to achieving carbon budgets are set out separately.

Table 1 – total projected emissions against CB4 – CB6 (MtCO₂e)

	CB4 5-yr (average pa)	CB5 5-yr (average pa)	CB6 5-yr (average pa)
Years covered	2023 - 2027	2028 - 2032	2033 - 2037
Budget limit	1950 (390)	1752 (350)	965 (193)
Baseline (includes EEP policies and baseline adjustments)	1917 (383)	1799 (360)	1958 (392)
Savings from new and early- stage proposals and policies	88 (18)	446 (89)	961 (192)
Residual emissions (after policy savings)	1829 (366)	1353 (271)	997 (199)
Performance against carbon budgets	121 (24)	399 (80)	-32 (-6)

Sectoral overview

19. Table 2 below sets out the projected sectoral emissions across the carbon budgets. These figures represent the projected residual emissions, after proposals and policies set out in this report have taken effect. The figures shown for each carbon budget are total emissions over the five-year period. Alongside this, we have shown the actual emissions over the single year of 2021 to show current performance. These are only projections and should not be interpreted as hard sectoral policy targets. Within our overall carbon budgets it is vital to retain a degree of flexibility to adjust our plans as circumstances change given the complexity of the net zero system and the inherent uncertainty in any projections. Modelling cannot always take into account systemic feedback effects, which are hard to quantify. Other factors such as consumer behaviour, technological innovation and the speed and structure of future economic growth further contribute to intrinsic uncertainties of long-term sectoral emissions projections.

Table 2 - Summary of sectoral residual emissions across carbon budgets (MtCO₂e)

Sector	Current (2021, pa)	CB4 5-yr (average pa)	CB5 5-yr (average pa)	CB6 5-yr (average pa)
Agriculture and LULUCF	49	231 (46)	207 (41)	183 (37)
Buildings	88	350 (70)	320 (64)	217 (43)
Domestic transport	109	546 (109)	422 (84)	254 (51)
Fuel supply	20	93 (19)	69 (14)	48 (10)
Industry	76	340 (68)	207 (41)	111 (22)
Power	54	143 (29)	63 (13)	42 (8)
Waste and F-gases	30	125 (25)	96 (19)	75 (15)
Greenhouse Gas Removals	N/A	0 (0)	-32 (-6)	-117 (-23)
Intl aviation and shipping (IAS)	20	217 (43)	210 (42)	184 (37)
Total excluding including IAS	426	1829 (366)	1353 (271)	813 (163)
Total including IAS	446	2046 (409)	1563 (313)	997 (199)

Background to our package of proposals and policies to meet the Carbon Budgets

20. Our Carbon Budget Delivery Plan is a dynamic long-term plan for a transition that will take place over the next 15 years, setting us on course to reach net zero by 2050. Many of the proposals and policies in the package will be phased in over the next decade or longer. Given our success in decarbonisation to date we are confident in our approach, but this plan does not intend to predict the exact shape of the British economy in 2037 or later, and nor should it.

21. We are taking a market-led approach to developing and deploying the technological shifts required to meet net zero. This means that it is very likely that some proposals or policies will out-perform expectations, with costs falling faster than we expect - for example, as scale increased, the per unit price of UK offshore wind fell by almost 70% between the first Contracts for Difference allocation round in 2015 and the fourth in 2022. Meanwhile, some other proposals or policies will under deliver compared to expectations. The complexity of the net zero system means there is inherent uncertainty in any forecasts. Modelling cannot always take into account systemic feedback effects, which are hard to quantify, such as co-benefits from technology roll-out. These have the potential to improve our position to enable the carbon budgets to be met.
22. Similarly, consumer behaviour, future trends and the future economic context, all of which will play a huge role in meeting carbon budgets and the exact mix of proposals and policies we need to get there is variable. For example, in recent years the uptake of electric vehicles has consistently exceeded expectations.
23. It is important to emphasise two points. Firstly, the list of proposals and policies that we set out is, necessarily, a snapshot of our current plan for meeting carbon budgets. As future circumstances change, we will review and adapt the proposals and policies in this report. Secondly, some of the measures relied upon are proposals at an early stage of development that may not be required at all if we are overachieving in meeting carbon budgets or that could be subject to significant change as part of the full policy development process. The mechanisms for implementing these proposals will depend upon technological developments, societal changes, stakeholder views, future spending arrangements and broader policy developments. The inclusion of proposals and policies at an early stage of development that require further design and development ensures we do not risk curtailing scientific and technological development through over-prescription, whilst still setting out a carefully-planned, long-term package that will enable carbon budgets to be met.

The methodology adopted in this report

24. In order to assess the package of proposals and policies against carbon budgets, we first calculated the expected emissions savings for all proposals and policies where this could be quantified at this stage (see Table 5). A range of analytical models, designed to represent the sectors described in this report, and analytical techniques were used to derive the estimates, using consistent assumptions on shared inputs (such as GDP and fuel prices), and set against an appropriate baseline for each sector.
25. Further detail on the methodological approach underpinning these estimates can be found in the Technical Annex.
26. The calculated savings assume the package of proposals and policies are delivered in full. We consider it is reasonable to expect this level of ambition -

having regard to delivery risks and the wider context, which give rise to both downside and upside risks (see further information on delivery risks below).

27. We then combined these savings with the baseline as described above, to calculate the position compared to the carbon budgets. We then considered the potential of unquantified policies, where we cannot currently quantify associated emissions savings, for example in relation to some early-stage proposals, where we are still assessing the available evidence.

Consideration of the 2030 Nationally Determined Contribution

28. The government is committed to delivering its international commitments, including the 2030 Nationally Determined Contribution (NDC) under the Paris Agreement. The UK will report to the United National Framework Convention on Climate Change on progress towards meeting the 2030 NDC from 2024 and will report on progress every 2 years.
29. We have quantified emissions savings to deliver 88 Mt or 92% of the NDC. We are confident the delivery of emissions savings by unquantified policies detailed in this package will largely close this gap and the government will bring forward further measures to ensure that the UK will meet its international commitments if required.

Conclusion on enabling carbon budgets to be met

30. As outlined, our quantified proposals and policies give us over 100% of savings required to meet Carbon Budget 4 and 5 and 97% of the savings required to meet Carbon Budget 6.
31. Whilst the savings deliverable from the proposals and policies are likely to exceed Carbon Budgets 4 and will substantially overdeliver against Carbon Budget 5, there is a judgement to be made whether the policies identified at this stage are sufficient to enable Carbon Budget 6 to be met. We are confident that Carbon Budget 6 can be met through a combination of the quantified and unquantified policies identified. Proposals and policies we expect to deliver additional carbon savings, beyond those currently quantified, is identified in the first column of Table 6 of Appendix B.
32. Examples of areas where we expect some further savings are areas of future research in the Agriculture and Land Use, Land-use Change and Forestry (LULUCF) sectors, as well as policies to further improve the energy efficiency of buildings and place-based transport interventions that will reduce emissions locally.
33. In addition, the package is further strengthened through the inclusion of a range of cross-cutting proposals and policies which will enable and support our other proposals and policies – whether through leveraging the investment needed for technological growth or delivering the green jobs needed for the transition. This

supports with de-risking delivery across the package. We also expect that some of these areas could lead to additional emissions savings beyond those we have currently quantified: for example our package of policies to drive innovation is likely to lead to new low-carbon technologies which will lower costs and accelerate the transition to net zero.

34. We have also considered wider factors, which will affect our ability meet carbon budgets. These include additional emissions reductions not related to central government policy, such as the action we know is being taken by local authorities and devolved administrations, and areas of wider uncertainty in our projections of emissions. Taken together, they could positively impact our ability to meet carbon budgets.
35. The full list of proposals and policies to enable carbon budgets to be met are presented in Appendix B. Figures are included at a UK level except in relation to land use policies which are England only. In setting out the total emission reductions, above, an assumption of overall emissions savings at UK level are assumed for land use.

Delivery risks to our package of proposals and policies

Background

36. The context within which we are delivering this transition is inherently uncertain. There are a wide range of fluctuating external factors which drive changes in greenhouse gas emissions and therefore the amount of savings we subsequently need to deliver to achieve carbon budgets. Our EEP baseline is sensitive to macro-economic changes, changes to fossil fuel prices, behavioural shifts and much more. This creates uncertainty and both upside and downside risks, which we manage through regular monitoring and updating of our baseline and, if necessary, taking action to address.
37. Policies included in the EEP baseline have high delivery confidence as they are at an advanced stage of development and have either been implemented already or are planned policies where the funding has been agreed and the design of the policy is near final.
38. Non-EEP proposals and policies vary in their degree of delivery confidence. This is because a significant proportion of these proposals and policies have uncertainties inherent in long-term policy making and linked to our spending review cycles (as explained in the background to our package of proposals and policies above). Again, there are both upside and downside risks. Naturally, as we move towards Carbon Budget 6, a greater number of proposals and policies that are currently at an earlier stage of development will move into implementation and form part of the EEP baseline, giving higher delivery confidence. Currently, 40% of all savings needed to achieve our Carbon Budget

6 are projected to come from government policies that are part of the EEP baseline, providing further confidence in the plan.

39. Furthermore, taking a market-led approach to the transition means that technological changes and behavioural shifts will significantly shape the delivery of government policies providing opportunities to out-perform expectations and deliver greater savings.
40. Appendix D includes summaries at a sectoral level of the delivery risk picture, which includes commentary on the significance of the risks faced and the mitigating action being taken.

Conclusion on delivery risk

41. We have robust mechanisms in place to monitor, manage and mitigate our delivery risks. The Secretary of State for the Department for Energy Security and Net Zero is deputy chair of the Domestic Economic Affairs (Energy, Climate and Net Zero (DEA (ECNZ)) Cabinet Committee, which oversees overall progress across the UK's climate portfolio, considering matters related to the delivery of net zero. This forum sits at the apex of our climate governance. Like its predecessor (The Climate Action Implementation Committee), DEA (ECNZ) will receive regular updates on the UK's progress against carbon budgets and the UK 2030 NDC, which are informed by regular reporting and to ensure timely action is taken to keep programmes and policies on track. This is supported by well-established official-level governance structures supporting DEA (ECNZ), which regularly scrutinises and approves analysis and reports on the proposals and policies being developed to keep us on track for our carbon budgets.
42. Taking account of the level of policies already in delivery and in the EEP projections; the progress already made for Carbon Budget 4; the timelines for further policy development and implementation for Carbon Budgets 5 and 6; and the risks and mitigations around those policies, we have assessed the risks as being manageable and consider that the package of proposals and policies will enable carbon budgets to be met.

Timescales

43. The timescales over which the proposals and policies take effect represent modelled estimates of when emissions savings are expected to begin and end. This is informed by an evidence-based understanding of how soon after policy implementation we would expect emissions savings to materialise; and for how long we anticipate the policy to continue to deliver emissions reductions. Whilst the government has committed to implementation dates for some proposals and policies, for others the implementation date remains subject to change as the policy develops. Further, some proposals and policies depend on funding decisions at future Spending Reviews. When emissions savings start to take effect is therefore dependent on the evidence underpinning the modelling as well

as when the policy is implemented – this means that the timescales presented in Appendix B will change over time. All proposals and policies are expected to deliver emissions savings until at least 2037, the end of Carbon Budget 6.

Appendix A: sector definitions

Table 3: Sector definitions

Net Zero Strategy Sector	Sector definition
Power	Emissions from power stations (Major Power Producers only), including those generating energy from waste.
Fuel Supply	Emissions from the extraction, processing, and production of fuels (chiefly oil, coal, gas and hydrogen).
Industry	Emissions from industrial processes, manufacturing, and production, including fuel combustion and product use in industrial buildings, as well as emissions from refineries and construction machinery. Includes emissions from non-Major Power Producers auto-generation and Combined Heat and Power.
Heat and Buildings	Emissions from public, commercial, and residential buildings, including domestic product use such as garden machinery and composting.
Domestic Transport	Emissions from all forms of road and rail transport, domestic aviation and domestic shipping (including fishing vessels).
International Aviation and Shipping	Emissions from fuel used in international aviation and international shipping, as measured by UK bunker fuel.
Agriculture	Covers emissions from livestock, crop soils and agricultural machinery.
Forestry and Other Land Use	Emissions and removals from land use change, forestry, peatlands and agro-forestry
Resources and Waste	Emissions from the treatment and disposal of solid and liquid waste and landfill, including emissions from incineration not used to generate energy (e.g. incineration of chemical waste).
Fluorinated Gases (F-gases)	Fluorinated gas emissions, primarily from refrigeration, air-conditioning, heat pumps, aerosols, and high voltage switchgear.
Greenhouse Gas Removals³	Negative emissions from engineered removal technologies, including direct air and bio-energy carbon capture and storage.

³ Nature-based solutions, such as afforestation, are included in the Agriculture and LULUCF sub-sector.

Appendix B: Tables of proposals and policies and projected emissions savings

Within this appendix, we list the individual proposals and policies which will enable the Carbon Budgets to be met. These are set out over three tables:

- Table 4 - Policies captured in the Energy and Emissions Projections (EEP)
- Table 5 - Quantified proposals and policies
- Table 6 - Unquantified proposals and policies

Notes to accompany Table 5 - Quantified proposals and policies

Explanation of UK-wide approach to emissions.

1. The carbon budgets apply to the whole of the UK economy and society. In preparing this package of proposals and policies, we have consulted with Devolved Administrations who we continue to work with to deliver our UK-wide carbon budgets. Emission reduction figures are included at a UK-wide level, with the exception of the agriculture, forestry and other land use (AFOLU) and waste sectors, where we have provided savings at an England-only level, as the vast majority of these policy areas are devolved. F-gases are presented at a GB-wide level. We have provided separate, assumed UK figures, representing estimated projections for ongoing carbon savings for CB4, CB5 and CB6, for these sectors. Simple assumptions have been used to generate an initial estimate for emissions savings in these sectors, in Scotland, Wales and Northern Ireland. Further detail on the methodology is included in the Technical Annex.

Explanation of approach to presenting timescales of policy effects

2. To fulfil the statutory requirement to set out the period over which the proposals and policies are expected to take effect, table 5 (quantified policies) indicates the year in which our modelling anticipates emissions reductions would start. For some proposals and policies, it is highly uncertain when the policy may be implemented – in these cases we have indicated the carbon budget period rather than a specific year. Table 6 (unquantified policies) also indicates the year or period from which we expect proposals and policies to take effect.
3. In all cases, the timescales over which we expect policies to take effect are not commitments – these may change according to developments in the evidence underpinning the modelling, the timing of policy implementation (unless the implementation date is an existing public commitment) and decisions on future spending (where applicable). All proposals and policies are expected to deliver emissions reductions until at least 2037, the end of Carbon Budget 6.

Explanation of “scenarios” in modelled emission savings.

4. In some areas the technology pathway is more uncertain than others. For example, the government continues to support the potential deployment of hydrogen in heat (through commercialising hydrogen deployment through funding via the Net Zero Innovation Fund, for instance) and also the electrification of heat (for instance through increased deployment of heat pumps).
5. For most of the proposals and policies in the package, we show savings under a high electrification scenario because their savings do not vary across the different scenarios. However, we have modelled different decarbonisation options for some proposals in the buildings and fuel supply sectors. The emissions savings attached to these policies varies depending on the level of deployment of hydrogen across the economy. This applies to three policy areas covering heat pump deployment, buildings “on the gas grid”, and the emissions associated with hydrogen production unquantified policies 58, 59 and 60. The modelled scenarios show how differing uptake rates of hydrogen may displace some technologies that rely on electrification (and the policies that support them) across the economy.
6. These scenarios are mutually exclusive. This means that emissions savings from policies in the high electrification scenario cannot be summed together with those from a “medium” or “high” hydrogen scenarios, as only one or the other policy would be implemented. Likewise, savings from “high” and “medium” hydrogen scenarios cannot be summed together. Although our list includes proposals and policies in different scenarios, we do not double count these emission savings in analysis presented elsewhere in this report. Across all sectors, the three scenarios achieve the same emissions reductions as each other – we do not expect emission reductions across the whole economy to vary materially depending on which of the three scenarios is taken forward through to 2050.

Explanation of power policies represented by a single emissions figure.

7. DESNZ simulates the power sector using the Dynamic Dispatch Model⁴, with emissions savings determined by comparing indicative net zero consistent scenarios against a scenario where no further government action is taken to decarbonise the power sector (which does not need to be net zero compliant). For all scenarios, the model builds sufficient capacity to ensure security of supply, with the capacity mix balanced to keep system costs low. Although specific capacity mixes are required by these scenarios, DDM modelling has shown that there are a range of capacity mixes that can achieve net zero and the government has adopted a market driven approach to delivering net zero.⁵

⁴ UK Government, Dynamic Dispatch Model (DDM) – May 2012. Available at: www.gov.uk/government/publications/dynamic-dispatch-model-ddm

⁵ UK Government, Modelling 2050 – electricity system analysis. Available at: www.gov.uk/government/publications/modelling-2050-electricity-system-analysis

8. We provide a single emissions savings figure for the whole sector because power sector proposals and policies all contribute to a single interlinked dynamic system. Calculating individual emissions savings (where capacity for a single technology does or does not materialise because of the policy) will yield significantly different values depending on whether that policy is evaluated in isolation or in conjunction with one or more other policies. This non-additive nature also means that single policy emissions savings are sensitive to the exact configuration of the chosen scenario, so two net zero consistent scenarios may yield different emissions savings for the same policy.
9. In this context, generating emissions savings for individual policies is likely to be both misleading and inaccurate. Risks to power sector decarbonisation are therefore not defined by the level of emissions savings for a given policy but rather in how each policy facilitates and accelerates the delivery of low carbon capacity and whether the policy retains optionality; that is, provide avenues for a large number of technologies to participate in the power sector, diversifying the technology mix and, in doing so, de-risking the system as a whole.
10. Emissions savings attributed to greenhouse gas removal technologies such as power-BECCS are accounted for in the Greenhouse Gas Removal section; whereas the contribution of that technology to low-carbon power generation as part of the power system are represented as part of the single Power carbon accounting line.
11. More information on how policies in the power sector are modelled can be found in the Technical Annex.

Table 4 – Policies captured in the Energy and Emissions Projections

We have taken the EEP policy table directly from Annex D, that is published as part of the EEP 2021-2040.⁶

Policy Characteristics					Savings (MtCO ₂ e)														
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
1	Active travel spending	Committed active travel spending from 2011/12 onwards including from ring-fenced and non-ringfenced funds including the Local Growth Fund, Other Government Infrastructure Funds (e.g. the Housing Infrastructure Fund), Highways Maintenance Fund, Transforming Cities Fund, Integrated Transport Block, Local Sustainable Transport Fund and Cycling Ambition Cities Fund	Implemented	2011	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Agricultural Policies	Agricultural Policies are a group of English, Scottish and Welsh policies and programs: the Agricultural Action Plan (England), the Climate Change Plan (Scotland), and the Climate Smart Agriculture (Wales). These policies aim to reduce emissions through a range of resource-efficiency and land management measures. Relevant policies are quantified in the aggregate 'Agricultural policies'.	Implemented	Various	1.3	1.3	1.4	1.5	1.5	1.6	1.7	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9
3	Boiler Plus (technical standards for domestic boiler installations)	The policy objectives are to deliver additional energy and carbon savings from the domestic heating sector in England by lowering overall gas demand from domestic properties. It aims to do this by increasing the deployment of devices which increase the efficiency of domestic heating systems, through controls and measures to make gas boilers heat homes more efficiently. The policy instrument is a technical standard set through statutory guidance under the Building Regulations framework. This requires existing households in England to install an additional energy saving measure from a choice list at	Implemented	2018	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.5	0.5

⁶ UK Government, Energy and emissions projections: 2021 to 2040. Available at: www.gov.uk/government/publications/energy-and-emissions-projections-2021-to-2040

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
		the point of installing a new or replacement combi gas boiler in an existing dwelling																		
4	Boiler Upgrade Scheme (BUS)	The Boiler Upgrade Scheme (BUS) is a £450m, 3year scheme offering upfront capital grants (£5000 for ASHP & Biomass, £6000 for GSHP) to property owners to install heat pumps and in some limited circumstances, biomass boilers, to replace fossil fuel heating systems. The scheme will open in spring 2022 until 31 March 2025.	Implemented	2022	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
5	Building Regulations Part L (2002+2005/6)	Building Regulations set minimum energy performance standards for new buildings and when people carry out controlled 'building work' to existing properties including extensions, conversions and certain categories of renovation and replacement windows and boilers.	Implemented	2002	8.7	8.2	7.6	7.1	6.6	6.0	5.5	5.1	4.6	4.1	3.7	3.2	2.7	2.3	1.8	
6	Building Regulations 2010 Part L	Building Regulations set minimum energy performance standards for new buildings and when people carry out controlled 'building work' to existing properties including extensions, conversions and certain categories of renovation and replacement windows and boilers.	Implemented	2010	6.0	6.1	6.4	6.5	6.1	5.6	5.2	4.8	4.6	4.5	4.3	4.1	3.9	3.8	3.6	
7	Building Regulations 2013 Part L	Building Regulations set minimum energy performance standards for new buildings and when people carry out controlled 'building work' to existing properties including extensions, conversions and certain categories of renovation and replacement windows and boilers.	Implemented	2013	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
8	Car policies	<p>EC Regulation 443/2009 sets fuel efficiency targets for new cars to be achieved by 2015 and 2020. The regulation translates a fleet average CO₂ tailpipe emissions target for new vehicles sold into the EU market into specific targets for individual manufacturers according to the mass of their fleet. Heavy fines are imposed for non-compliance. The 2021 target is for a fleet average of 95g CO₂/km across the single market, with a transition period where 95% of a manufacturer's fleet must meet the 95g target by 2020.</p> <p>New stretching CO₂ reduction targets (EU Regulation 2019/631) have been introduced for 2025 and 2030 based on the 2021 Worldwide Harmonised Light Vehicle Test Procedure (WLTP) measurements. As a result, the new passenger cars and light duty vehicles CO₂ regulation came into force in January 2020. The Road Vehicle Emission Performance Standards (Cars and Vans) (EU Exit) (Amendment) Regulations 2019 in March 2019 ensure the UK's existing ambition and targets out to 2024 still apply even in the event of the UK leaving the EU without a deal in January 2020.</p> <p>Complementary measures are a collection of technologies that could improve 'real world' fuel efficiency of cars which would not be fully captured in new car CO₂ target and could improve fuel efficiency within the existing fleet. These include gear shift indicators, tyre pressure monitoring systems more efficient mobile air-conditioning and low rolling resistance tyres. EC Regulation 661/2009 sets minimum requirements and introduce labelling for the rolling resistance, wet grip and external rolling noise of tyres.</p> <p>Measures to support the uptake of</p>	Implemented	2012	6.2	8.5	10.8	13.3	16.0	19.1	22.0	25.1	27.6	30.0	32.3	34.5	36.8	38.7	40.3	

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
		ultra-low emission vehicles include the Plug-in Grant funding for ultra-low emission vehicle (ULEV) cars, vans, motorcycles and taxis as well as various tax incentives including lower rates for Vehicle Excise Duty and Company Car Tax. Electric vehicle (EV) infrastructure is directly supported through the Workplace Charging Scheme grants for EV chargepoints for employees and fleets, the Electric Vehicle Homecharge Scheme grants towards home EV chargepoints, the On-street Residential Chargepoint Scheme and the public-private £400 million Charging Infrastructure Investment Fund, launched in September 2019. Highways England have committed £15 million to ensure that 95% of the Strategic Road Network will be within 20 miles (32.2km) of a charging point.																		
9	Carbon Trust measures	The Carbon Trust provides a range of measures from general advice to in-depth consultancy and accreditation, to reduce emissions and save energy and money to businesses and public sector organisations of all sizes.	Expired	2002	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10	Carbon Emissions Reduction Target (CERT) Uplift and Extension (2010-12)	CERT extension - increased the targets originally set under CERT by 20% and required domestic energy suppliers with a customer base in excess of 50,000 (later increased to 250,000) to make savings in the amount of CO ₂ emitted by householders. The extension also refocused subsidy towards insulation measures and away from electricity saving measures such as low energy lighting - and introduced a super priority group (households in receipt of certain means-tested benefits) to make energy reductions in low income and vulnerable households.	Expired	2010	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
11	Community Energy Saving Programme (CESP)	Community Energy Saving Programme (CESP) - area based regulation that targeted households across Great Britain, in areas of low income, to improve energy efficiency standards, and reduce fuel bills. CESP was funded by an obligation on larger energy suppliers and also the larger, electricity generators.	Expired	2009	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
12	CRC Energy Efficiency Scheme	The CRC (formerly the Carbon Reduction Commitment) is a mandatory UK-wide emissions trading scheme (launched in 2010). It encourages the uptake of energy efficiency measures in large non-energy intensive private and public sector organisations that use energy not covered by the EU ETS or Climate Change Agreements. It covers around 5000 medium and large users of energy across the business and public sector. The scheme is split into phases. Phase 1 ran from 1 April 2010 until 31 March 2014. Phase 2 runs from 1 April 2014 until 31 March 2019. In the 2016 Spring Budget, the Chancellor announced there would be no further sales of CRC allowances after Phase 2 (i.e. following the 2018/19 compliance year) and legislation was laid in July 2018 to close the scheme after Phase 2. From April 2019, the CCL will be increased to recover the revenue forgone from CRC allowances and a new streamlined energy and carbon reporting framework for quoted companies of all sizes and large unquoted companies and large Limited Liability Partnerships will come into force UJ-wide.	Implemented	2010	0.9	0.9	0.9	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Policy Characteristics				Savings (MtCO ₂ e)															
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
13	Energy Company Obligation (ECO) 3	The reformed scheme (ECO 3) will run from autumn 2018 to March 2022. The scheme focuses completely on low income and vulnerable households. Supplier thresholds were lowered to 200,000 domestic customers from 2019, and 150,000 domestic customers from 2020. A new 'Innovation' element was introduced to incentivise new better performing measures and cost-effective delivery techniques (up to 10% of scheme), and up to a further 10% of scheme for a monitoring regime to better understand measure performance. The LA Flexible Eligibility mechanism was increased to up to 25% of the scheme.	Implemented	2018	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
14	Energy Company Obligation (ECO) 4	n/a	Implemented	n/a	0.2	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
15	Energy company obligation (ECO) Extension	The 2015 Spending Review announced that ECO will be replaced with a new, lower cost scheme that will run for 5 years (to March 2022) and will tackle the root causes of fuel poverty. The 5-year extension will take place in the two phases, with the ECO Extension (April 2017 - Sept 2018) acting as a bridge between the expired ECO scheme and the new fuel poverty focused scheme, ECO 3, which will run from December 2018 to March 2022. The Local Authority Flexible Eligible mechanism was introduced under ECO2 Extension, enabling LAs to determine eligibility and refer households to obligated suppliers. Up to 10% of Affordable Warmth could be delivered through this route.	Implemented	2017	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
16	Energy company obligation (ECO)	The Energy Company Obligation (ECO) is a statutory obligation on energy suppliers with over 250,000 domestic customers and delivering over a certain amount of electricity or gas to make reductions in carbon emissions or achieve heating cost savings in domestic households. ECO focuses on insulation measures, and also heating improvements to low	Expired	2013	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
		income and vulnerable households. It ran until March 2017. ECO initially ran to March 2015 (also known as 'ECO1') and was extended in April 2014 to March 2017 ('ECO2').																		
17	EEC1 (energy efficiency commitment), EEC2 (2002-2008) & Baseline Carbon Emissions Reduction Target (CERT) (2008-2010)	EEC I: GB wide regulation that required all electricity and gas suppliers with 15,000 or more domestic customers to achieve a combined energy saving of 62 TWh by 2005 by incentivising their customers to install energy-efficiency measures in homes. EEC II - energy suppliers with more than 50,000 domestic customers required to deliver a total of 130 TWh lifetime energy use reductions in GB households, primarily through the promotion of energy efficiency measures. Carbon Emission Reduction Target (CERT) – GB regulation that required all domestic energy suppliers with a customer base in excess of 50,000 domestic customers to make savings in the amount of CO ₂ emitted by householders.	Expired	2002	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
18	Energy Performance Certificate of Buildings Directive (EPBD; UK transposition)	Energy Performance Certificates (EPCs) are required when any building is sold, rented out or constructed, and sometimes after refurbishment work. EPCs give information on a building's energy efficiency in a sliding scale from 'A' (very efficient) to 'G' (least efficient).	Implemented	2007	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	

Policy Characteristics					Savings (MtCO ₂ e)														
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
19	Energy Savings Opportunity Scheme (ESOS)	A mandatory energy assessment scheme for all large undertakings (non-SMEs) in response to requirements contained Article 8 of the EU Energy Efficiency Directive (2012/27/EU). Organisations which employ 250 or more people, or employ fewer than 250 people but have both an annual turnover exceeding £38.9m and an annual balance sheet total exceeding £33.4m, must measure their total energy consumption and carry out audits of the energy used by their buildings, industrial processes and transport to identify cost-effective energy saving measures, by 5 December 2015 and every four years thereafter. It is estimated that around 10,000 organisations will participate in the scheme.	Implemented	2014	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5
20	F-gas regulations	The F-gas regulations introduced a 79% phase down in the quantities of hydrofluorocarbons that can be placed on the EU market and was delivered via a gradually reducing quota system; a number of bans on the use of certain F gases in some new equipment; a ban on the use of very high GWP HFCs for the servicing of certain types of refrigeration equipment; and some strengthening of obligations in the 2007 regulation relating to leak checking, repairs, F gas recovery and technician training. These regulations were introduced by the EU in 2014 and passed into UK law in 2015.	Implemented	2014	3.8	4.3	4.6	4.9	5.2	5.5	5.7	6.0	6.2	6.5	6.8	7.1	7.4	7.6	7.9
21	Forestry policies	Forestry policies are a range of post-2009 policies aimed at driving afforestation and reforestation. Relevant policies are quantified in the aggregate 'Forestry policies'.	Implemented	Various	-0.3	-0.3	-0.3	-0.2	-0.1	0.0	0.0	0.1	0.2	0.3	0.5	0.6	0.7	0.9	1.0
22	Green Gas Support Scheme	The Green Gas Support Scheme (GGSS) is a tariff subsidy to support the generation of biomethane by anaerobic digestion, for injection into the gas grid. It launched in November 2021 and will be open for applications until 2025, operating in England, Scotland and Wales. It is funded through the Green Gas Levy.	Implemented	2021	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

#	Policy Characteristics				Savings (MtCO ₂ e)															
	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
23	Green Heat Network Fund (GHNF)	GHNF is £328m fund that provides capital support to develop low carbon heat network infrastructure. Its objective is to accelerate the low carbon transition of new and existing heat networks and increase waste heat recovery from heat sources not currently exploited. GHNF supports greater deployment of large heat pumps (air-source, ground-source and water-source), waste-heat recovery (including heat exchangers and heat pumps boosting heat from industrial/commercial processes and energy-from-waste plants), solar thermal with storage, and biomass (where this is sustainably sourced and complies with air-quality legislation).	Implemented	2021	0.1	0.1	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
24	Green Homes Grant Local Authority Delivery Scheme	The GHG Local Authority Delivery Scheme (LAD) is a scheme of up to £500m for energy efficiency low-carbon heating improvements for low-income households.	Implemented	2020	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
25	Green Homes Grant Voucher Scheme	The Green Homes Grant voucher scheme was announced in 2020 as an economic stimulus scheme. It opened on 30th September 2020, but early closure was announced resulting in applications ending on 31st March 2021. Up to £320m budget is allocated for FY21/22, but current applications will come out of this budget. Policy savings represent an estimate of savings as a result of estimated installations later on in the year as a result of applications to the scheme, which have now closed, and so estimated energy savings could change significantly.	Expired	2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Policy Characteristics					Savings (MtCO ₂ e)														
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
26	Heat Networks Investment Project	The Heat Networks Investment Project (HNIP) is a capital funding scheme across England and Wales to encourage the development of heat networks. The HNIP is expected to support up to 200 projects by 2021 through grants and loans and other mechanisms and to lever in up to wider investment, reducing bills, cutting carbon and forming a key part of wider urban regeneration in many locations. The scheme will be open for applications from heat networks for up to three years and allocate commercialisation and construction funding through a competitive process. The key objective of the project is to build a sustainable market for heat networks to support the decarbonisation of heat in buildings, helping the UK reach the carbon budget targets.	Implemented	2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
27	Heat Networks Metering and Billings Regulations	The Heat Network (Metering and Billing) Regulations 2014 aim to introduce fairer billing and incentivise energy savings, by requiring heat suppliers to install heat metering devices where cost-effective and to bill based on consumption. The approach to assessing cost-effectiveness was suspended in 2015 due to methodological issues. Since then, this aspect of the Regulation has not been enforced. Amendments to the Regulation are required to support the installation of customer-level metering devices, reduce administrative burden, support wider UK climate goals, and enable consistency across heat network customers and compliance with the requirements of the Energy Efficiency Directive (EED).	Implemented	2020	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
28	Heavy Goods Vehicles (HGV) Policies	<p>EC Regulation 661/2009 sets minimum requirements and introduces labelling for the rolling resistance, wet grip and external rolling noise of tyres. Industry and government are taking a range of actions to reduce freight emissions, including the Freight Transport Association's Logistics Carbon Reduction Scheme, which encourages members to record, report and reduce emissions from freight. The Mode Shift Revenue Support scheme encourages modal shift from road to rail or inland waterway where the costs are higher than road, and where there are environmental benefits to be gained. It currently helps to remove around 800,000 lorry journeys a year from Britain's roads. A similar scheme, Waterborne Freight Grant, can provide assistance with the operating costs associated with coastal or short sea shipping.</p> <p>A voluntary, industry-supported commitment to reduce HGV greenhouse gas emissions by 15% by 2025, from 2015 levels, was introduced in 2018.</p> <p>The Regulation (EU) 2019/1242 setting CO₂ emission standards for heavy-duty vehicles entered into force on 14 August 2019. The Regulation also includes a mechanism to incentivise the uptake of zero- and low-emission vehicles, in a technology-neutral way. From 2025 on, manufacturers will have to meet the targets set for the fleet-wide average CO₂ emissions of their new lorries registered in a given calendar year. Stricter targets will start applying from 2030 on.</p> <p>The targets are expressed as a percentage reduction of emissions compared to EU average in the reference period (1 July 2019-30 June 2020): from 2025 onwards a 15% reduction, from 2030 onwards a 30% reduction.</p> <p>The 2025 target can be achieved using technologies that are already available on the market. The 2030 target will be</p>	Implemented	2012	0.9	1.1	1.4	1.7	2.0	2.2	2.5	3.0	3.5	3.9	4.3	4.6	4.9	5.2	5.4	

Policy Characteristics					Savings (MtCO ₂ e)															
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
		assessed in 2022 as part of the review of the Regulation.																		
29	Industrial Energy Transformation Fund (IETF)	The Industrial Energy Transformation Fund (IETF) was announced in the autumn Budget in 2018. The Fund will support businesses with high energy use, such as energy intensive industries, to transition to a low carbon future. It will help companies cut their energy bills and carbon emissions through investing in energy efficiency and low-carbon technologies. The IETF has a UK-wide budget of £315m over five years to 2024.	Implemented	2019	0.2	0.5	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementati on status	Implement ation date	202 3	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
30	Industrial Heat Recovery Support (IHRS)	The policy aims to increase industry confidence to invest in the technology potential to recover heat from industrial processes, and increase the deployment of such technologies across manufacturing and data centres in England and Wales. It establishes a fund for feasibility studies that examine the potential for industrial businesses to adopt heat recovery technologies and a fund to subsidise the deployment of heat recovery technologies.	Implemented	2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
31	Van Policies	<p>EC Regulation 510/2011 sets fuel efficiency targets for new Light Commercial Vehicles (LCV) to be achieved by 2017 and 2020. EC Regulation 661/2009 sets minimum requirements and introduces labelling for the rolling resistance, wet grip and external rolling noise of tyres. The regulation translates a fleet average CO₂ tailpipe emissions target for new vehicles sold in the EU market into specific targets for individual manufacturers according to the mass of their fleet. Heavy fines are imposed for non-compliance. The 2020 target is for a fleet average of 147g CO₂ /km and represents a reduction of 19% from the 2012 average. EC Regulation 510/2011 sets fuel efficiency targets for new Light Commercial Vehicles (LCV) to be achieved by 2017 and 2020. EC Regulation 661/2009 sets minimum requirements and introduces labelling for the rolling resistance, wet grip and external rolling noise of tyres. The regulation translates a fleet average CO₂ tailpipe emissions target for new vehicles sold into the EU market into specific targets for individual manufacturers according to the mass of their fleet. Heavy fines are imposed for non-compliance. The 2020 target is for a fleet average of 147g CO₂ /km and represents a reduction of 19% from the 2012 average.</p> <p>New stretching CO₂ reduction targets (EU Regulation 2019/631) have been introduced for 2025 and 2030 based on the 2021 Worldwide Harmonised Light Vehicle Test Procedure (WLTP) measurements. As a result, the new passenger cars and light duty vehicles CO₂ regulation came into force in January 2020. The Road Vehicle Emission Performance Standards (Cars and Vans) (EU Exit) (Amendment) Regulations 2019 in March 2019 ensure the UK's existing ambition and targets out to 2024 still apply even in the event of the UK leaving the EU without a deal in</p>	Implemented	2012	1.2	1.3	1.6	1.9	2.1	2.4	2.6	3.1	3.6	4.1	4.7	5.2	5.7	6.3	6.8	

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
		<p>January 2020.</p> <p>To help address payload penalty issues and encourage uptake of cleaner vans, a derogation from the European Union third Driving Licence Directive (2006/126/EC) has been introduced to allow Category B (car) licence holders to operate alternatively fuelled vehicles up to a maximum authorised mass of 4.25 (rather than 3.5) tonnes.</p> <p>Complementary measures to support the uptake of ultra-low emission vans include the Plug-in Van Grant and various tax incentives; for instance zero emission vans only pay a small proportion of the van benefit charge and are not subject to the van fuel benefit charge. Electric vehicle (EV) infrastructure is directly supported through the Workplace Charging Scheme grants for EV chargepoints for employees and fleets, the Electric Vehicle Homecharge Scheme grants towards home EV chargepoints, the On-street Residential Chargepoint Scheme and the public-private £400 million Charging Infrastructure Investment Fund, launched in September 2019. Highways England have committed £15 million to ensure that 95% of the Strategic Road Network will be within 20 miles (32.2km) of a charging point.</p>																		

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
32	Products Policy (Implemented 2009 - 2016)	The EU Ecodesign Directive and the Energy Labelling Framework Regulation operate by setting minimum performance and information requirements (respectively) for energy-using products. They aim to take the least efficient products off the market and to give consumers clear energy use-related information to guide their purchasing decisions. This is implemented through product-specific EU regulations, replicated in UK law.	Implemented	2009	2.8	2.7	2.9	2.8	2.7	2.3	2.3	2.0	2.2	2.2	2.3	2.2	2.0	2.0	2.0	
33	Products Policy (Implemented 2008)	The EU Ecodesign Directive and the Energy Labelling Framework Regulation operate by setting minimum performance and information requirements (respectively) for energy-using products. They aim to take the least efficient products off the market and to give consumers clear energy use-related information to guide their purchasing decisions. This is implemented through product-specific EU regulations, replicated in UK law.	Implemented	2008	2.8	2.4	2.4	2.0	1.8	1.3	1.2	0.9	1.1	1.1	1.1	1.0	0.8	0.8	0.7	
34	Private Rented Sector Energy Efficiency Regulations	There are two distinct parts to the Private Rented Sector Energy Efficiency Regulations. The first part represents the 'Tenants' energy efficiency improvements' provisions, which came into force in 2016. The second part represents the 'Minimum level of energy efficiency' provisions which were implemented in 2018. This implies a requirement for any properties rented out in the private rented sector to have a minimum energy performance rating of E on an Energy Performance Certificate (EPC), unless the property meets the conditions for an exemption, and that exemption has been registered on the PRS Exemptions Register. The regulations came into force for new lets and renewals of tenancies in England and Wales with effect from 1 April 2018 and for all longer-term tenancies on 1 April 2020 (1 April 2023 for non-domestic properties). In April 2019 these regulations were further strengthened with respect to the domestic sector only, to require a	Implemented	2016, 2018	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

Policy Characteristics					Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037		
		<p>contribution of up to £3,500 from landlords towards the cost of improving their property towards EPC Band E (previously landlords of domestic properties were only required to take action where third party funding was available to meet the improvement costs). It will be unlawful to rent a property which breaches the requirement for a minimum E rating, unless one of the limited number of exemptions applies.</p> <p>There is no minimum requirement for private rented sector properties in Northern Ireland currently.</p>																			
35	Public service vehicles (PSV) Policies	<p>The Green Bus Fund (GBF) allowed bus companies and local authorities in England to compete for funds to help them buy new low carbon emission buses. The four rounds of the fund, which ran from 2009- 2014, added around 1250 Low Carbon Emission Buses onto England's roads. The GBF has now been replaced by the Low Emission Bus Fund (LEBS) which offered £30m for bus operators and local authorities across England and Wales to bid for low emission buses and supporting infrastructure. This scheme funding is open from 2016-2019 and the successful bidders were announced in July 2016, adding more than 300 extra low emission buses to fleets. In Autumn 2016, a further £100m was announced to increase the amount of low emission buses on the road. £11.1m was used to fund those who narrowly missed out on LEBS funding, and £48m formed the Ultra-Low Emission Bus Scheme which was launched in March 2018. Winners of</p>	Implemented	2006	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.0		

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
		<p>this scheme were announced in February 2019. The remaining funding formed the Clean Bus Technology Fund, which was used to fund retrofitting solutions for existing bus fleets to a minimum Euro VI standard, and the winners of this fund was announced in February 2018. This was in addition to the previous £27m of Clean Bus Technology Fund rounds in 2013 and 2015. There was also a £5m Clean Vehicle Technology Fund in 2014. These funding schemes have contributed to an extra 5000 low emission buses on the road.</p>																		
36	Public Sector Decarbonisation Scheme	The Public Sector Decarbonisation Scheme provides grants for public sector bodies to fund heat decarbonisation and energy efficiency measures. This return includes the £1bn of funding allocated in phase 1 of the scheme, £0.075bn of funding made available in phase 2, and £1.425bn of funding made available in phase 3.	Implemented	2020	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
37	Public Sector Energy Efficiency Loans Scheme - Pre-LCTP & Post-LCTP	The Public Sector Energy Efficiency Loans Scheme, managed by Salix Finance Ltd, provides interest-free loans in England, Scotland and Wales to public sector organisations for energy efficiency schemes. These loans are intended to provide the capital cost of energy efficiency retrofit work and other measures to be installed. These loans have a payback period of five years (eight for schools) during which the repayments are met with the energy bill savings from the energy efficiency measures. Thus, once the loan has been paid off, the organisations continue to benefit from energy savings for the lifetime of these measures. This funding is then	Implemented	2004	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Policy Characteristics					Savings (MtCO ₂ e)															
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
		recycled once it has been returned to the Scheme and once again loaned out. BEIS provides the most amount of funding to the Scheme but there is also some funding from the Scottish Government, the Welsh Government and the Department for Education.																		
38	Public Sector Energy Efficiency Loans Scheme - Pre-LCTP & Post-LCTP	The Public Sector Energy Efficiency Loans Scheme, managed by Salix Finance Ltd, provides interest-free loans in England, Scotland and Wales to public sector organisations for energy efficiency schemes. These loans are intended to provide the capital cost of energy efficiency retrofit work and other measures to be installed. These loans have a payback period of five years (eight for schools) during which the repayments are met with the energy bill savings from the energy efficiency measures. Thus, once the loan has been paid off, the organisations continue to benefit from energy savings for the lifetime of these measures. This funding is then recycled once it has been returned to the Scheme and once again loaned out. BEIS provides the most amount of funding to the Scheme but there is also some funding from the Scottish Government, the Welsh Government and the Department for Education.	Implemented	n/a	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	

Policy Characteristics					Savings (MtCO ₂ e)														
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
39	Renewable heat incentive (RHI)	<p>The Non-Domestic Renewable Heat Incentive (RHI) is a Great Britain (GB) wide scheme which provides financial incentives to increase the uptake of renewable heat by businesses, the public sector and non-profit organisations. Eligible installations receive quarterly payments for 20 years based on the amount of heat generated.</p> <p>The Domestic RHI is a GB wide scheme which provides financial incentives to promote the use of renewable heat in domestic properties. Eligible installations receive quarterly payments for seven years based on either the estimated amount of renewable heat generated, or their metered heat use.</p> <p>In Northern Ireland, separate Renewable Heat Incentive schemes operated before being suspended on 29 February 2016.</p>	Implemented	2011 non-domestic GB, 2014 domestic GB	5.1	5.2	5.2	5.2	5.2	5.2	5.2	5.1	5.1	5.1	4.9	4.5	3.7	2.9	2.2
40	Smart metering	<p>The smart metering programme will replace 53 million meters with smart electricity and gas meters in all domestic properties, and smart or advanced meters in smaller non-domestic sites in Great Britain by the end of 2025. Smart meters will deliver consumers with near-real time information on their energy consumption to help them control energy use, so avoiding wasting energy and money. It will deliver energy networks with better information upon which to manage and plan current activities. Smart meters will also assist the move towards smart grids which support sustainable energy supply and will help reduce the total energy needed by the system. There are now 28.8 million smart and advanced meters operating across Great Britain. In January 2022, the Smart Metering Implementation Programme began a new 4-year targets-based framework to maintain roll out momentum.</p>	Implemented	2012	1.8	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0

#	Policy Characteristics				Savings (MtCO ₂ e)															
	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
41	Small and Medium Enterprises (SME) Loans	The Carbon Trust provided interest free loans of £3,000 - £400,000 for small and medium sized businesses to invest in energy efficiency equipment and renewable technologies. These loans were designed so that in most cases the forecast reduction in energy costs would be similar to the total repayment amount.	Expired	2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
42	Social Housing Decarbonisation Fund	The Social Housing Decarbonisation Fund (SHDF) Demonstrator is a £60mn innovation project that looks at applying whole house retrofit to social housing over 2021.	Implemented	2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
43	Streamlined Energy and Carbon Reporting for business (SECR)	SECR is a reporting framework which obligates all large (as defined by the Companies Act 2006) UK registered companies to report their energy use and associated emissions relating to electricity, gas and transport in their annual reports. Companies will also be required to provide an intensity metric and disclose any energy efficiency actions undertaken during the reporting period. Quoted companies will in addition be required to report their global energy use and GHG emissions.	Adopted	2019	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
44	Renewable Transport Fuel Obligation, (RTFO) - 5% by volume	The RTFO set a 4.75% target for biofuel use by diesel and petrol suppliers to be achieved by 2014. Targets are by volume rather than by energy. Implemented the EU Renewables Directive (2009/28/EC).	Implemented	2007	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	
45	Renewable Transport Fuel Obligation, (RTFO) - Increase target to meet RED	This policy sets enhanced overall targets of 9.75% (by volume) for biofuel use by diesel and petrol suppliers by 2020 and at least 12.4% in 2032. It implements the EU Renewables Directive (2009/28/EC) as amended by the ILUC Directive (2015/1513).	Implemented	2018	4.7	4.9	5.0	5.1	5.2	5.3	5.4	5.4	5.4	5.5	5.2	5.0	4.8	4.6	4.5	

Policy Characteristics				Savings (MtCO ₂ e)																
#	Policy name	Policy Description	Implementation status	Implementation date	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
46	Warm front	Warm Front installed heating and insulation measures to make homes warmer and more energy efficient for private sector households in England vulnerable to fuel poverty. The scheme offered a package of heating and insulation measures of up to £3,500 (or £6,000 where oil central heating or other alternative technologies are recommended).	Expired	2000	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
47	Warm Home Discount (WHD)	The Warm Home Discount (WHD) scheme provides an energy bill rebate to low income and vulnerable households. We assume that recipients will spend a portion of the rebate on increased energy consumption for heating. Upper and lower scenarios are derived from the uncertainty range in the labelling effect (the proportion of the WHD rebate that recipients spend on energy). The central estimate is 41%, with an uncertainty range of 15%-66%. The larger labelling effect (66%) is used for the "lower" EEP scenario, as this leads to a larger increase in energy consumption. The smaller labelling effect (15%) is used for the "upper" scenario, as this leads to a smaller increase in energy consumption. The source of the range in labelling effect is: "Cash by any other name? Evidence on labelling from the UK Winter Fuel Payment (2011)" https://www.ifs.org.uk/publications/5603	Implemented	2021	-0.4	-0.4	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
48	Electricity supply policies: recent decarbonisation policies in the electricity supply industry	Electricity supply policies' are a bundle of decarbonisation policies in the electricity supply industries. Recent policies (post-LCTP) are quantified in the aggregate 'Decarbonisation policies in the electricity supply industries'. Older policies are included in the baseline and mitigation impacts are not quantified.	All	Various	32.4	32.2	31.1	37.3	42.5	47.1	49.2	45.4	47.6	48.3	48.5	49.8	52.2	54.3	57.0	

Table 5 – Quantified proposals and policies

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
1	Power	Emissions savings associated with power sector decarbonisation. By nature of the power sector, HMG cannot allocate savings to the power policies so the aggregate savings will be captured here.	Emissions savings associated with power sector decarbonisation. By nature of the power sector HMG cannot allocate savings to the power policies so the aggregate savings will be captured here. An explanation for our accounting approach this interrelated set of policies can be found in the main report, Appendix B, para 6 and Technical Annex.	2.7	6.7	11.2	CB4
2	Power	Contracts for Difference (CfD) Allocation Rounds	A CfD is a long term contractual agreement between a low carbon electricity generator and Low Carbon Contracts Company (LCCC), designed to provide the generator with price certainty over the lifetime of the contract. Contracts for Difference Allocation Rounds will run annually. The first annual auction will be the fifth CfD Allocation Round (AR5) scheduled to open in March 2023. This is the government’s main mechanism for supporting low-carbon electricity generating projects in Great Britain, including the goal to deliver up to 50GW offshore wind (including 5GW floating wind) by 2030 and up to 70GW solar by 2035.				Live policy (AR1 projects live 2016/17)
3	Power	Review of Contracts for Difference (CfD) Mechanism	The government will keep the Contracts for Difference (CfD) mechanism under review to ensure it remains investable and capable of addressing emerging barriers to renewable energy deployment. The government will respond to the consultation published in December 2022, which sought views and supporting evidence on specific changes proposed for the sixth Allocation Round of the CfD scheme (AR6), as well as early views on longer-term policy considerations for future rounds. Through ensuring an effective functioning of the CfD allocation rounds, this policy will support the delivery of low carbon electricity generating projects. On supporting repowered projects, Energy Security Plan states that government will consider how to ensure investment in repowered assets is appropriately valued in the market, to ensure locations with good energy resource continue to contribute to electricity security. This will include considering the potential of the CfD to support repowered projects, as part of a CfD consultation response by Spring.				Early CB5 (assumes consultation implements reform)

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
4	Power	Non Price Factors in the Contracts for Difference (CfD) Scheme	The government is launching a Call for Evidence in April 2023 on the potential introduction of non-price factors into the CfD. If implemented, this would mean that, when considering CfD applications, HMG could take into account additional factors of value to the system and not only the statutory considerations of value for money and maximising deployment. Any changes made to the CfD scheme under these proposed changes would support the delivery of low-carbon, low-cost electricity generation capacity.				Late CB5 (assumes consultation implements reform)
5	Power	Offshore Wind Manufacturing Investment Support Scheme (OWMIS)	This scheme supported investment in port infrastructure and manufacturing in the offshore wind supply chain. It was implemented to support development of offshore wind supply chain capacity. The scheme therefore indirectly supports emission reductions by de-risking the delivery of offshore wind capacity.				Late CB4
6	Power	Offshore Wind Acceleration Taskforce (OWAT)	OWAT's work has helped put in place measures to accelerate the deployment of offshore wind and supported industry actions. The government has worked with the OWAT, Ofgem, the National Grid, the Crown Estates and the Devolved Administrations to speed up planning and consenting for offshore wind farms. The Supply Chain and Infrastructure Working Group, established under OWAT, has also identified and addressed barriers to the development of the offshore wind supply chain.				Mid CB5
7	Power	Offshore Wind Environmental Improvement Package (OWEIP)	The Offshore Wind Environmental Improvement Package (OWEIP) will support the accelerated deployment of offshore wind, whilst maintaining environmental protections. The OWIEP will be implemented through regulations to adapt environmental assessments for offshore wind, enable strategic compensation and introduce industry funded Marine Recovery Funds. The government is seeking to introduce legislation through the Energy Bill to deliver the OWEIP, alongside non-legislative measures. This package will de-risk the delivery of offshore wind capacity including government's ambition to deploy up to 50GW offshore wind by 2030.				Early CB5
8	Power	Floating Offshore Wind Manufacturing Investment Scheme (FLOWMIS)	This scheme, which will launch in March 2023, will provide up to £160m to kick start investment in port infrastructure projects needed to deploy and service the scale of the floating offshore wind pipeline. This will indirectly support carbon emission reductions by de-risking the delivery of offshore wind capacity.				Mid CB5
9	Power	Floating Offshore Wind Taskforce	The government is working with the industry-led Floating Offshore Wind Taskforce to identify what investment in infrastructure is needed to support deployment of up to 5GW of floating offshore wind by 2030, and to support its further expansion into the 2030s and beyond. The taskforce will bring together companies from across the sector to coordinate their efforts, and speed up the further development.				Mid CB5

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10	Power	Floating Offshore Wind Demonstration Programme	The Floating Offshore Wind Demonstration Programme, using £31m government funding matched by £30m from industry, supports research and development to advance floating offshore wind technology. This work has the potential to enable the development and deployment of floating offshore wind capacity, and in doing so help the government achieve its ambition of up to 5GW floating offshore wind (part of the up to 50GW offshore wind ambition).				2022
11	Power	Radar and Offshore/Onshore Wind	<p>DESNZ is working with industry, the Ministry of Defence, and The Crown Estate to find both interim and enduring solutions to mitigate air defence radar interference from offshore wind turbines. Similarly, government is working jointly with industry and the aviation sector to formulate a long-term strategy to address current and future civil radar interference issues.</p> <p>This policy is focussed on safety and security; and is not expected to lead to emissions savings. This package will de-risk the delivery of approximately 20GW of offshore wind capacity, and support ongoing deployment of onshore wind.</p> <p>The document 'Competition document: windfarm mitigation for UK Air Defence' on www.gov.uk notes, 'The continued development of wind turbine sites has the potential to cause a number of negative effects on civil and military air traffic control and defence. Offshore windfarms, when in the line of sight of radar, have a detrimental effect on Ministry of Defence's (MOD) primary surveillance radar capability used to deliver a recognised air picture for Air Defence.'</p>				Mid CB5
12	Power	Local Partnerships for Onshore Wind (England)	The government will consult on developing local partnerships for onshore wind in England so that those who wish to host new onshore wind infrastructure can benefit from doing so – a commitment made in the British Energy Security Strategy. The government is due to launch a new consultation to seek views on how to improve the system of engagement and benefits in England. The proposals in the consultation may help to indirectly reduce delays and improve the consenting of onshore wind planning applications by introducing policies to improve community support for onshore wind projects in England. However, the consultation does not include any policies that will directly drive the deployment of onshore wind.				Mid CB4
13	Power	Marine Spatial Prioritisation Programme	The cross-government, Defra-led Marine Spatial Prioritisation programme aims to support strategic planning of renewables and other sea uses by optimising use of the marine space, maximising coexistence between different sea users and balancing this with restoring and protecting the marine environment.				Late CB5 (assuming outputs impact offshore wind projects)
14	Power	Solar Taskforce and Roadmap	In line with the Skidmore Review recommendation, and to provide certainty to investors in the solar industry, the government will publish a solar roadmap setting out a clear step by step deployment trajectory to achieve a fivefold increase (up to 70GW) of solar by 2035. Government will also establish a government/industry taskforce, covering both ground mounted and rooftop solar to drive forward the actions needed by government and industry to make this ambition a reality.				Late CB4

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15	Power	VAT Amendments for Solar in Spring Statement 2022	The government has supported the rollout of rooftop projects by removing VAT on solar panels installed on residential accommodations, and introducing capital allowances for rooftop solar panels until March 2027. This policy will incentivise residential solar deployment and therefore help to de-risk the delivery of solar capacity and support the government's ambition to deliver up to 70GW solar by 2035.				Live policy (announced in 2022)
16	Power	Permitted Development Rights (solar)	The government is currently consulting on changes to permitted development rights. The proposed changes seek to simplify planning processes for larger commercial rooftop installations and introduce a new permitted development right for non domestic solar canopies. The consultation was published on 28 February.				Mid CB4 (assumes consultation implements reform)
17	Power	Low-cost Finance for Solar for Homes and Small Businesses	To meet the demand for rooftop solar, the government is looking at facilitating low-cost finance from retail lenders for homes and small business premises, aligning with recommendation in the Skidmore Net Zero Review.				Mid CB4 (assuming full implementation)
18	Power	Emerging Workforce Challenges (renewables, with a focus on solar)	The joint government/industry Green Jobs Delivery Group is developing an action plan which will address key emerging workforce challenges for solar and other renewables. The solar sector is also working with training partners, certification scheme providers and local bodies such as Mayor of London to provide grants, learning tools, and training and placement programmes. DESNZ expect that the new solar taskforce will consider further actions to build supply chain resilience and strengthen skills capability. This policy is key to ensuring the relevant skills and supply chain needed to build solar capacity are available, enabling the delivery of solar capacity.				Late CB4
19	Power	Consultation on Future Homes and Building Standards	The government will explore how it can continue to drive onsite renewable electricity generation, such as solar panels, where appropriate in new homes and buildings. Bringing forward new renewables generation is a key component of decarbonising the power system.				Late CB4
20	Power	National Planning Policy Framework (Local, England)	Recognising that onshore wind is an efficient, cheap and widely supported technology, government has consulted on changes to planning policy in England for onshore wind to deliver a localist approach that provides local authorities more flexibility to respond to the views of their local communities. We will respond to the NPPF consultation in due course.				Early CB5

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21	Power	Advice and Guidance to Public Sector Procurement	The government will publish guidance to support the installation of solar technology on the Central government and wider public sector estate. This will incentivise and enable the deployment of solar technology.				Mid CB4 (assuming full implementation)
22	Power	Biomass Strategy	The government has committed to publishing a Biomass Strategy, which is due in 2023. The Strategy will set out how sustainable biomass could be best utilised across the economy to help achieve the government's net zero and wider environmental commitments while also supporting energy security. The Strategy will also establish the role which BECCS can play in reducing carbon emissions across the economy and set out how the technology could be deployed.				Mid CB5
23	Power	Energy from Waste (EfW) and the UK Emissions Trading Scheme (UK ETS)	<p>The government is exploring expanding the UK ETS to waste incineration and EfW by the mid-late 2020s.</p> <p>This would incentivise the development and uptake of decarbonisation technologies and practices to reduce emissions from waste incineration and EfW, principally by strengthening long-term investment incentives. For example, the scheme could enhance the pre-treatment of waste before it is incinerated to reduce fossil plastic in the waste stream. This is otherwise a costly and intensive process.</p> <p>The expansion of the UK ETS would also incentivise investment into Carbon Capture and Storage (CCS) to reduce CO2 emissions from EfW, depending on wider availability of the technology and infrastructure, and cost-benefit to the plant. Due to biogenic content present in waste streams, in future operators may be able to generate 'negative emissions' by applying CCS equipment to EfW plants, depending on the level of biogenic CO2 captured.</p> <p>As per the consultation in March 2022 in Developing the UK ETS, we propose to explore expanding the UK ETS to waste incineration and EfW by the mid-late 2020s i.e. around the end of CB4. Government will respond to this consultation shortly and will set out more detail on the intended timing</p>				Around end of CB4 (see description)
24	Power	Power Bioenergy with Carbon Capture and Storage (BECCS) Business Model	The government is developing a first of a kind (FOAK) business model for power Bioenergy with Carbon Capture and Storage (BECCS) to incentivise negative emissions and low carbon electricity generation. Power BECCS is expected to play an important role in helping the UK to achieve net zero and to contribute significantly to the ambition to deliver five million tonnes of GGRs by 2030, whilst also delivering low-carbon electricity to contribute toward security of supply within Great Britain. The government consulted on the proposed business model framework last summer; consultation considered actions the government can take to enable the deployment of power BECCS at scale, through addressing prevailing market failures, deployment barriers and risks to investment. The consultation also proposed a number of high level business model design options, included a question on the most appropriate negative emissions market and posed questions on the proposal to include supply chain emission thresholds. The work on the business model will help to support our ambition to deploy power BECCS. A consultation response will be published imminently.				Mid CB5

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			Power BECCS provides two types of carbon savings. Within the Power sector, Power BECCS delivers carbon savings by displacing non-zero CO2 emissions electricity generation with low carbon electricity generation. Within the GGR sector, Power BECCS contributes carbon savings from generating negative emissions by capturing the CO2 emissions from biomass-to-power plants and storing those safely and permanently.				
25	Power	Power Carbon Capture, Usage and Storage (CCUS)	The government has announced the project negotiating list for Track 1 carbon capture, usage and storage (CCUS) clusters. The negotiating list contains one power CCUS project. The government will provide up to £20 billion funding for early deployment of CCUS across all sectors. Further projects will be able to enter a selection process for Track 1 expansion launching this year, and 2 additional clusters will be selected through a Track 2 process.				Late CB4/Early CB5 subject to project negotiations, cluster negotiations, linked project delivery
26	Power	Dispatchable Power Agreement (DPA)	The government has developed a Dispatchable Power Agreement (DPA) business model to bring forward a first of kind carbon capture, usage and storage (CCUS) power plant. The model will potentially supporting additional CCUS power plants in the future. When deployed, this first of a kind CCUS plant will provide low carbon electricity generation and reduce power sector emissions.				From late CB4/early CB5 subject to project negotiations, cluster negotiations, linked project delivery
27	Power	Hydrogen to Power	In the Energy Security Plan, government announced our intention to consult in 2023 on the need and potential design options for hydrogen to power market intervention. To support the consultation development, government has commissioned external research on the need and case for market intervention to support hydrogen to power plants. This policy could enable the accelerated deployment of hydrogen to power capacity and the support the decarbonisation of the power sector. Emission reductions would be dependent on the pace and scale of deployment and so reductions are unquantified at this stage.				By mid CB5 or earlier depending on future policy decisions, market conditions, and linked policy delivery
28	Power	Decarbonisation Readiness	HMG published our Decarbonisation Readiness consultation in March 2023 on proposed updates to the 2009 Carbon Capture Readiness requirements. The proposals would require new build and substantially refurbishing combustion power plants to be built in such a way that they could easily decarbonise by converting to either 100% hydrogen generation or carbon capture technology. This policy does not have direct emission savings associated with it, but will enable emission savings				July 2024 as proposed in the March 2023 Decarbonisation Readiness Consultation

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29	Power	Great British Nuclear	<p>The government is committing to a programme of new nuclear projects beyond Sizewell C, giving industry and investors the confidence, they need to deliver projects at speed, reducing costs through learning and replication. To deliver this, we have launched Great British Nuclear (GBN) which will be an arms-length body with the responsibility to drive delivery of new nuclear projects, backed with funding it needs.</p> <p>The first priority for GBN is to launch a competitive process to select the best SMR technologies. This will commence in April with market engagement as the first phase. The second phase will follow in the summer, with an ambition to assess and decide on the leading technologies by autumn.</p> <p>We are working towards bringing forward legislation setting out Great British Nuclear's statutory role when parliamentary time allows. In the meantime, work will continue at pace to achieve our ambition within the existing legal framework to support delivery of HMG's ambitions.</p>				Mid to end CB6
30	Power	Sizewell C Government Investment Decision	<p>Following the government's investment decision to take a £700m stake in Sizewell C, the government will work with EDF as a co-shareholder in the project to continue its development. This includes plans to prepare for a capital raise later this year, using the newly established RAB model for nuclear. The government's investment was an historic step, as our first direct investment in a nuclear project for 35 years. New nuclear projects like Sizewell C will work alongside renewables to help to ensure secure and stable, low-cost and low-carbon electricity system for the long-term.</p>				Live
31	Power	Regulated Asset Base Model	<p>Following consultation and the passing of the Nuclear Energy (Financing) Act 2022, the government is implementing a Regulated Asset Base (RAB) model as an option for funding new nuclear projects. In November 2022, the Sizewell C project became the first to be designated to benefit from the RAB model, following a statutory consultation.</p> <p>In sharing risk between projects and consumers (overseen by an economic regulator) RAB has the potential to reduce the cost of project capital, the biggest driver of nuclear project costs.</p> <p>The appropriate funding model for each new nuclear project will be determined through negotiations between government and the project's developer. Providing this option to developers will support the development of new projects, helping the government achieve its ambition to have up to 24 GW of nuclear capacity by 2050.</p>				RAB projects are targeted to begin contributing to the energy system mid-late CB6, subject to all project-specific approvals
32	Power	Advanced Nuclear Fund	<p>The government has committed to spend up to £385 million to invest in the next generation of nuclear technologies. This includes up to £210 million for Small Modular Reactors (SMRs) to develop a domestic smaller-scale power plant technology design, and funding for a research and development programme to deliver an Advanced Modular Reactor (AMR) demonstration by the early 2030s.</p> <p>While this policy will not deliver emissions savings itself, it will play an important role in enabling the</p>				Mid-CB5, depending on policy development and commercial outcomes

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			nuclear sector to evolve, potentially delivering additional low-carbon, low-cost power and heat, and helping the government achieve its ambition of up to 24 GW of nuclear capacity by 2050				
33	Power	Future Nuclear Enabling Fund (FNEF)	The Future Nuclear Enabling Fund (FNEF) is a £120m fund announced in the government's Net Zero Strategy: Build Back Greener in 2021. The fund is the first in a series of government interventions designed to achieve the government's ambition of deploying up to 24GW of nuclear capacity by 2050, as announced in the British Energy Security Strategy (BESS). The FNEF will help industry reduce project risks, so they are better positioned for anticipated future investment decisions. The FNEF is targeted at applicants that could be in a position to take a Final Investment Decision (FID) within the next parliament, subject to Value for Money and all relevant approvals.				Mid-CB6 assuming value for money, and all relevant approvals
34	Power	Levelling-Up and Regeneration Bill (Energy Infrastructure)	The government is making amendments to the Levelling-up and Regeneration Bill to give powers to the Secretary of State to improve the National Significant Infrastructure Projects (NSIP) system. Our aim is to bring forward and, where necessary, incentivise firm, flexible and variable low carbon technologies to meet anticipated demand and reduce reliance on unabated fossil fuel generation. This policy will enable the deployment of these low carbon technologies, which would be expected lead to carbon emissions savings.				2024
35	Power	Interconnectors	Ofgem's decision on Third Cap and Floor Window for Electricity Interconnectors and Ofgem's Multi-Purpose Interconnector Pilot Scheme (publicly available, confirms Ofgem decisions on project eligibility) will incentivise and encourage investment in electricity and multi-purpose interconnectors. The cap and floor regime will deliver a new generation of interconnectors and the multi-purpose interconnector pilot will enable investment in low carbon infrastructure and more effective coordination in the delivery of low-cost offshore networks.				Early/mid CB5
36	Power	Holistic Network Design and follow up exercise	The government will support the National Grid ESO on The Pathway to 2030 Holistic Network Design and Follow Up Exercise. This is a network design, delivered by the ESO, to connect the offshore wind projects covered by the Pathway to 2030 workstream of the Offshore Transmission Network Review in a coordinated manner. The Holistic Network Design will incentivise investment in network infrastructure which is needed to connect new generation offshore wind assets and demand to the grid, and to avoid congestion and permit the most efficient electricity system.				Mid CB5
37	Power	Consultation on National Policy Statements	The government will update the National Policy Statements for energy to ensure they provide a suitable framework to support decision making for nationally significant energy infrastructure. This is the first time they have been updated since 2011. The policy need for energy has been strengthened and the language of the NPSs has been simplified and made more accessible. An initial consultation was issued in early 2022, and documents have been further updated to reflect the increased ambition set out in the NZS and BESS. Stronger National Policy Statements will ensure that HMG has a planning policy framework which can support the infrastructure required to transition to net zero.				Late CB4 subject to further decision making and commercial activity'

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38	Power	Offshore Transmission Network Review	The review looks into the way that the offshore transmission network is designed and delivered, consistent with the ambition to deliver net zero emissions by 2050. It brings together the key stakeholders involved in the timing, siting, design and delivery of offshore wind to consider all aspects of the existing regime and how this influences the design and delivery of transmission infrastructure. The review is determining whether changes need to be made to offshore transmission networks to enable new generation to operate effectively, connect both new generation assets and demand to the grid, and accelerate transmission and distribution infrastructure build to avoid congestion and permit the most efficient system. The outcomes of the OTNR will support the delivery of offshore wind generation assets by accelerating the delivery of the transmission required to move power to the centres of demand. It will also reduce the local and environmental impacts of transmission through an increase in coordinated infrastructure.				Mid CB5
39	Power	Offshore Coordination Support Scheme	The Offshore Coordination Support Scheme provides grants to offshore energy projects to develop coordinated options for offshore transmission infrastructure. The secondary objective of the scheme is to learn lessons from funding activities to support coordination in late-stage projects that can be applied to later workstreams of the Offshore Transmission Network Review (OTNR). The Scheme will complement those other arrangements to facilitate coordination being made as part of the OTNR. The Scheme is a competitive process under which one or more Applications may receive Grant funding. The scheme will enable the development of offshore low carbon infrastructure. This will support and enable the delivery of offshore wind capacity and help in delivering the ambition of up to 50GW offshore wind by 2030.				Mid CB5
40	Power	Onshore Networks: Competitive Tendering and Special Merger Regime	Through primary legislation in the Energy Bill and forthcoming secondary legislation, the government will introduce competitive tendering in onshore electricity networks and an Energy Networks Special Merger Regime. Introducing competition will provide new opportunities to invest in networks where it is efficient to do so. The creation of a new competitive market should improve efficiency in investment, foster innovative solutions to network needs, including increasing the opportunities for smart and flexible solutions, and reduce costs to consumers.				Early CB4
41	Power	Electricity Networks Strategic Framework	Early stage policy development - this joint DESNZ and Ofgem publication sets out a strategic framework, and actions the government and Ofgem are taking, to ensure the electricity network can act as an enabler of a secure, resilient, net zero energy system - for example (per the publication) 'speeding up the connections process by reviewing minimum standards for connections (in particular, the time it takes a customer to connect to the distribution grid); introducing a penalty-only incentive for distribution network operators to deliver on major network connections)'. The focus of this work is to enable the necessary transformation of the network at the scale and pace required to accommodate decarbonisation and demand growth. It is therefore a key enabler of decarbonisation and of other decarbonisation targets such as the government's ambitions on offshore wind and solar generation and the 2035 phase out of new petrol and diesel cars and vans.				Early CB4 - framework is live

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42	Power	Electricity Networks Commissioner's Recommendations	The government appointed Nick Winser as Electricity Networks Commissioner to advise the government, Ofgem and industry on actions to accelerate the delivery of electricity transmission network infrastructure. The Electricity Networks Commissioner is expected to make recommendations to government in June. This will enable decarbonisation through the potential to accelerate network infrastructure build, therefore allowing new generation and demand to connect to the grid more quickly.				Mid CB4 subject to Commissioner recommendations being agreed and actioned
43	Power	Response to Consultation on Options for Community Benefits for Transmission Infrastructure	The government has published a consultation on community benefit options for network infrastructure ('Community Benefits for Electricity Transmission Network Infrastructure' March 2023) and, pending responses, intends to produce guidance on community benefits. The consultation considers different types of community benefits and how this can be implemented (e.g. voluntary or mandatory). The consultation proposes to introduce voluntary guidance on the appropriate levels and forms of benefits to give communities the knowledge, power and flexibility to decide what benefits they want in consultation with the project developer, with the option to move to a mandatory approach if necessary. The consultation proposes introducing a recommended level of funding for community benefits, which we believe will increase the level of funding from that seen in existing examples of community benefits for electricity transmission network infrastructure. The proposed guidance will focus on providing direct benefit payments to eligible individuals and wider community-focused benefits. Following consultation feedback, we intend to work with community and industry representatives to develop the guidance, which we intend to publish in 2023. The proposals enable decarbonisation by supporting the timely deployment of network infrastructure to connect low carbon generation and technologies, by improving community support and avoiding delays.				Early CB4 subject to taking forward consultation responses and publishing guidance
44	Power	Land Rights and Consenting for Electricity Networks	To understand whether the current land rights and consenting processes for electricity network infrastructure are fit for purpose, government sought views on what improvements could be made in a call for evidence and will respond this year. This policy is likely to enable or incentivise timely deployment of electricity network infrastructure that will be necessary for connecting low carbon generation and demand to the grid.				Early CB4
45	Power	Ofgem Decision on Accelerated Strategic Investment	Ofgem's Accelerating Strategic Transmission Investment work seeks to accelerate regulatory approval for delivery of key strategic transmission network projects to 2030. This work will act as an enabler for investment into electricity transmission networks, enabling decarbonisation by allowing timely connection of low carbon generation and demand to the grid.				Early CB5
46	Power	Fast-track System for Nationally Significant Infrastructure Projects (NSIPs) Projects	DLUHC are designing a fast-track system for Nationally Significant Infrastructure Projects (NSIPs) that meet certain quality standards. The clauses are in the Levelling Up Regeneration Bill, which is going through Parliament, and pilots are expected to include offshore wind developments, de-risking the delivery of offshore wind capacity.				Start late 2023, having full effect from 2024 onwards

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47	Power	RIIO-ED2 Final Determinations	Ofgem Final Determinations for Distribution Network Operators (DNOs) on expenditure for the next electricity distribution price control (RIIO-ED2) from 2023-2028. This policy will enable carbon savings as it will directly determine investment into electricity distribution networks that will be necessary for enabling the timely connection of low carbon electricity generation and demand.				2023
48	Power	Strategy and Policy Statement for Energy Policy	The Strategy and Policy Statement (SPS) set out the government's strategic priorities and other main considerations of its energy policy, the policy outcomes to be achieved as a result of the implementation of that policy, and the roles and responsibilities of those who are involved in implementation of that policy. The SPS will enable emissions savings because the Energy Act 2013 and imposed new duties on Ofgem to have regard to the strategic priorities when carrying out its regulatory functions and to carry out those functions in the way it considers is best calculated to further the delivery of the specified policy outcomes.				Early CB4
49	Power	Future System Operator	The government will be taking powers to establish the Future System Operator (FSO) through the Energy Bill. The FSO will build on the existing capabilities and functions of the Electricity System Operator, managing the electricity system in real time, as well as supporting its future development. It will also be responsible for gas strategic network planning, long-term forecasting and market strategy functions. No emissions savings have been quantified; it has no direct emission impacts but the body it enables (FSO) could be a significant driver of emission reductions.				Depending on a number of factors, including timings of the Energy Bill and discussing timelines with key parties, our aim is for the FSO to be operational by, or in, 2024
50	Power	Energy Code Governance Reform	Through the legislation in the Energy Bill the government will be creating a new governance framework for the energy codes. This will empower Ofgem to set a strategic direction for how the detailed rules of the energy system should evolve each year and create licensed code managers to ensure that direction is delivered. The reforms will allow Ofgem to drive strategic change across the codes, for example for the coordinated delivery of Net Zero priorities, alongside benefits for consumers and competition. The new code governance framework will also aim to remove potential barriers to innovation arising from the current arrangement, ensuring the codes governance process is better equipped to facilitate the widespread changes required to deliver Net Zero.				Late CB4 depending on when Ofgem receives powers from the Energy Bill and is then able to issue the

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51	Power	Capacity Market 2023 Consultation	The government has launched a consultation on "Capacity Market 2023: strengthening security of supply and alignment with net zero", which closed on 3rd March 2023. This policy aims to ensure that the capacity market remains fit for purpose while also looking at options for aligning the capacity market with the government's Net Zero ambitions.				2034 - subject to further analysis/policy development, and security of supply
52	Power	Energy Markets Reform - Consultations and Call for Evidence	On Retail Markets, government are considering retail market reforms aimed at making sure the market supports the wider transformation of our energy system, whilst also working better for consumers and being more resilient and investable. We aim to publish a Call for Evidence in summer 2023 on how the retail regulatory framework needs to evolve to support new ways of offering energy supply. On the Review of Electricity Market Arrangements, the programme ('REMA') is exploring the reforms needed to (non-retail) electricity market arrangements to support delivery of a decarbonised power system by 2035, helping to deliver a cost-effective transition to a future net zero power sector, whilst maintaining a secure electricity supply. The government first consulted on REMA in 2022, and published the summary of responses in March 2023. We aim to publish a second REMA consultation in Autumn 2023.				From mid CB4 subject to call for evidence and consultation responses
53	Power	Energy Digitalisation Strategy	Delivering the actions set out in the Energy Digitalisation Strategy. Continuing to work with Ofgem and Innovate UK, building on the joint response to the recommendations of the Energy Digitalisation Taskforce. The actions in the strategy will deliver greater digitalisation of the energy system and implementation of smart technologies needed to integrate low carbon technologies.				Mid-CB4
54	Power	Smart Systems and Flexibility Plan	The government will deliver the actions set out in the Smart Systems and Flexibility Plan. This will remove barriers to flexibility on the electricity grid and reform markets to reward flexibility. This includes legislating for enabling powers in the Energy Security Bill and consulting on proposals for a Secure and Smart Electricity System, alongside learning from innovative approaches such as the National Grid Electricity System Operator's Demand Flexibility Service. These measures form part of our approach to bring forward and incentivise firm, flexible and low carbon technologies that are needed to meet demand and ensure security of supply and de-risking the delivery of emission reductions in the power sector.				Mid-CB4

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55	Power	Large Scale Long Duration Storage (LLES)	Large scale, long duration storage (LLES) is a key enabler to a secure, cost-effective and low carbon energy system. It has an important role to play in achieving net zero, helping to integrate renewables, maximising their use, contributing to security of supply, and helping manage constraints in certain areas. LLES technologies provide low carbon flexibility, replacing some unabated gas generation. DESNZ will ensure the deployment of sufficient LLES to balance the overall system by developing appropriate policy to enable investment by 2024				Mid CB5 subject to policy design
56	Power	Longer Duration Energy Storage (LODES) Competition	Energy storage has the ability to significantly reduce carbon emissions by shifting low-carbon energy supply to meet demand. To support development of new energy storage technologies the government has been running the Longer Duration Energy Storage (LODES) innovation competition. The first phase of the £68m LODES program, the feasibility phase, has successfully concluded. In November 2022 we announced £32.9 million of LODES funding awarded to successful Phase 2 projects (build and demonstration phase). DESNZ expect to announce further recipients of Phase 2 funding in early 2023 as part of the £1 billion Net Zero Innovation Portfolio. While it is expected that these projects will deliver demonstration schemes. They are intended to be proofs of concept and so carbon emissions savings have not been determined for this competition.				Mid-CB4
57	Power	Flexibility Innovation Programme (FIP)	To support widespread electricity system flexibility, the government has been running the Flexibility Innovation Programme (FIP), part of the £1 billion Net Zero Innovation Portfolio. This Programme, worth up to £65 million, is supporting over 40 innovation projects, and includes innovation action on Interoperable Demand Side Response, Alternative Energy Markets, Vehicle-to-Everything and Automatic Asset Registration. These projects are intended to support innovation, deliver proof of concepts, and deliver insights to policy development which will enable decarbonisation of the energy system; and so carbon emissions savings have not been determined for this policy.				Mid-CB4
	Fuel Supply	Note on Hydrogen Scenario Modelling	HMG continues to support the potential deployment of hydrogen in heat (through commercialising hydrogen deployment through funding via the Net Zero Innovation Fund, for instance) and also support for electrification of heat, for instance through increased use of heat pumps. Because of this, we have modelled different decarbonisation pathways for parts of the buildings and fuel supply sectors that vary depending on the level of deployment of hydrogen across the economy. This applies to three policy areas covering heat pump deployment, buildings "on the gas grid", and the emissions associated with hydrogen production. Modelled scenarios show how differing uptake rates of hydrogen may displace some electrification across the economy. These scenarios are mutually exclusive of one another. Emissions savings from the high electrification scenario cannot be summed together with those from a "medium" or "high" hydrogen scenarios. Likewise, savings from "high" and "medium" hydrogen scenarios cannot be summed together. Although our list therefore includes proposals and policies in different scenarios, we do not double count these emission savings in analysis presented elsewhere in this report.				
58	Fuel Supply	10GW Low Carbon Hydrogen Production by 2030 and beyond - Net Zero Hydrogen Fund & Hydrogen	Delivery of the 2030 ambition for 10GW low carbon hydrogen production capacity, with at least half from electrolytic hydrogen, will be supported through a range of measures.	-0.051	-0.3	-0.3	Mid CB4

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
		Production Business Models (baseline assumption)	<p>These include:</p> <p>a) £240m Net Zero Hydrogen Fund (capital funding)</p> <p>b) Hydrogen Production Business Model (funded via the Industrial Decarbonisation and Hydrogen Revenue Support Scheme)</p> <p>c) Industrial Decarbonisation and Hydrogen Revenue Support scheme (IDHRS), which will support both electrolytic ('green') and CCUS enabled methane reformation ('blue') low carbon hydrogen production.</p> <p>d) New business models for hydrogen transport and storage infrastructure by 2025, which will grow the hydrogen economy and provide security for producers of hydrogen.</p> <p>e) Working with industry and other stakeholders to develop a hydrogen production roadmap on the scaling up of hydrogen production and supply chain growth across the decade</p> <p>We have announced today the shortlist of projects to take through to due diligence for the first electrolytic allocation round, which will offer support from our Net Zero Hydrogen Fund and from the Hydrogen Production Business Model.</p> <p>Please refer to the note on hydrogen modelling above and the Technical Annex for an explanation of our modelling in this sector.</p>				
59	Fuel Supply	10GW Low Carbon Hydrogen Production Capacity by 2030 and 18GW by 2037 and beyond - in an electrification pathway	This is a modelled scenario covering hydrogen production capacity deployment to 2037 in a scenario where heating is electrified. It only includes production capacity which is additional to our 10GW ambition, so it is additive to the '10GW low carbon hydrogen production by 2030 and beyond' ((HYbase – line 58) line. This scenario assumes hydrogen production capacity reaches a	0.000	0.000	-0.069	CB6

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			<p>total of 18GW by 2037, which is sufficient to meet demand for hydrogen in a scenario where heat is electrified. This scenario would require further policy development beyond 2030.</p> <p>Our production policies are grouped together to model our planned hydrogen production deployment. It is not possible to quantitatively split out the impact of the separate policies, as they each contribute to hydrogen production and are interlinked. Hydrogen production alone will not generate carbon savings, but we expect it to enable potential carbon savings in several sectors including industry, power, transport and potentially buildings by replacing high-carbon fuels.</p> <p>a) £240m Net Zero Hydrogen Fund (capital funding) b) Hydrogen Production Business Model (funded via the Industrial Decarbonisation and Hydrogen Revenue Support Scheme) c) Industrial Decarbonisation and Hydrogen Revenue Support scheme (IDHRS), which will support both electrolytic ('green') and CCUS enabled methane reformation ('blue') low carbon hydrogen production. d) New business models for hydrogen transport and storage infrastructure by 2025, which will grow the hydrogen economy and provide security for producers of hydrogen. e) Working with industry and other stakeholders to develop a hydrogen production roadmap on the scaling up of hydrogen production and supply chain growth across the decade</p> <p>We have announced on 30 March the shortlist of projects to take through to due diligence for the</p>				

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			<p>first electrolytic allocation round, which will offer support from our Net Zero Hydrogen Fund and from the Hydrogen Production Business Model.</p> <p>We are aiming to run annual allocation rounds for electrolytic hydrogen, moving to price competitive allocation by 2025 as soon as legislation and market conditions allow. This means that we aim to have up to 1GW of electrolytic hydrogen in construction or operational by 2025, with up to 2GW of production capacity overall (including CCUS-enabled hydrogen) in operation or construction by 2025.</p> <p>Please refer to the note on hydrogen modelling above and the Technical Annex for an explanation of our modelling in this sector.</p>				
60	Fuel Supply	10GW Low Carbon Hydrogen Production Capacity by 2030 and 34GW by 2037 and beyond - in a hydrogen pathway	<p>This is a modelled scenario covering hydrogen production capacity deployment to 2037 in a scenario where hydrogen is used for heating. It only includes production capacity which is additional to our 10GW ambition, so it is additive to the '10 GW low carbon hydrogen production by 2030 and beyond' line. This scenario assumes hydrogen production capacity reaches a total of 34GW by 2037, sufficient to meet demand for hydrogen in a scenario where hydrogen is used for heat. This scenario would require further policy development beyond 2030.</p> <p>Our production policies are grouped together to model our planned hydrogen production deployment. It is not possible to quantitatively split out the impact of the separate policies, as they each contribute to hydrogen production and are interlinked. Hydrogen production alone will not generate carbon savings, but we expect it to enable potential carbon savings in several sectors</p>	0.000	-0.011	-0.4	CB5

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			<p>including industry, power, transport and potentially buildings, as a replacement to high-carbon fuels.</p> <p>a) £240m Net Zero Hydrogen Fund (capital funding)</p> <p>b) Hydrogen Production Business Model (funded via the Industrial Decarbonisation and Hydrogen Revenue Support Scheme)</p> <p>c) Industrial Decarbonisation and Hydrogen Revenue Support scheme (IDHRS), which will support both electrolytic ('green') and CCUS enabled methane reformation ('blue') low carbon hydrogen production.</p> <p>d) New business models for hydrogen transport and storage infrastructure by 2025, which will grow the hydrogen economy and provide security for producers of hydrogen.</p> <p>e) Working with industry and other stakeholders to develop a hydrogen production roadmap on the scaling up of hydrogen production and supply chain growth across the decade</p> <p>We have announced on 30 March the shortlist of projects to take through to due diligence for the first electrolytic allocation round, which will offer support from our Net Zero Hydrogen Fund and from the Hydrogen Production Business Model.</p> <p>We are aiming to run annual allocation rounds for electrolytic hydrogen, moving to price competitive allocation by 2025 as soon as legislation and market conditions allow. This means that we aim to have up to 1GW of electrolytic hydrogen in construction or operational by 2025, with up to 2GW of production capacity overall (including CCUS-enabled hydrogen) in operation or construction by 2025.</p>				

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
Please refer to the note on hydrogen modelling above and the Technical Annex for an explanation of our modelling in this sector.							
61	Fuel Supply	Bio-Generation Emissions Associated with Future Framework/Scheme for Biomethane Support	This line represents emissions created as a by-product of our policy framework to deliver increased production of biomethane and associated carbon savings. Biomethane will play an important role in decarbonising the gas grid and supporting various pathways to Net Zero. This framework, which would be subject to public consultation, would build on the Green Gas Support Scheme (GGSS), which will increase the amount of biomethane injected into the gas grid and closes to new applicants in 2025/6	-0.005	-0.2	-0.4	2027
62	Fuel Supply	Flaring and Venting Abatement	Reduce emissions from the practice of gas flaring and venting in the oil and gas industry. This policy is in line with government's commitment to the World Bank's 'Zero Routine Flaring by 2030' initiative, the North Sea Transition Deal and the sector's target for 50% reduction of emissions by 2030, and 100% by 2050. The North Sea Transition Authority's Strategy includes the expectation that flaring, venting, and associated emissions will be at the lowest possible levels and requires new developments to be planned based on zero routine flaring and venting.	0.000	0.2	0.2	2031
63	Fuel Supply	Electrification of Upstream Oil and Gas Production	This is a policy to promote electrification of existing and new offshore oil and gas production assets in the North Sea via integration with the onshore grid and offshore renewables infrastructure, with the aim of reducing emissions by 50% by 2030, and 100% by 2050. The policy is in line with the	0.000	1.0	0.7	2028

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			North Sea Transition Deal and will be delivered by government, key regulators including the North Sea Transition Authority and industry.				
64	Fuel Supply	Reducing Methane Leakage through the Distribution Network (Ofgem and HSE)	This is an Ofgem and Health and Safety Executive (HSE) policy to reduce methane leakage from the Gas Distribution Networks through the replacement of old iron mains pipes with new plastic pipes, through the Ofgem/HSE Iron Mains Risk Reduction Programme (IMRRP). Ofgem funds this work through the RIIO-2 price control (as set out in the price control framework). Leakage rates for plastic pipes are around 99% lower than for metallic pipes.	1.1	1.0	0.9	2018
65	Industry	Industrial Carbon Capture Business Models as part of the Track 1 CCUS Cluster Sequencing Process	Business model for Industrial Carbon Capture (ICC), comprising upfront capital support (via the CCS Infrastructure Fund) and ongoing revenue support (via the Industrial Decarbonisation and Hydrogen Revenue Support (IDHRS) scheme) as part of the Track 1 CCUS Cluster Sequencing process programme. DESNZ will work to evolve the business model and allocation process to enable us to contribute and deliver these long-term ambitions. Updated business model contracts with further technical contractual drafting are planned to be published in 2023. Preparations to lay relevant secondary legislation in 2023 (following the Energy Security Bill) are also being made. Note: The start date for this row contains a degree of uncertainty. The actual start dates are subject to successful project negotiations with multiple projects and clusters, and project delivery.	0.084	0.9	0.9	Late CB4 - Early CB5

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
66	Industry	Industrial Carbon Capture Business Models for the additional carbon capture of industrial emissions needed to achieve 6 MtCO2 p.a. in total by 2030	<p>Building on the Industrial Carbon Capture (ICC) business models as part of the Track 1 CCUS Cluster Sequencing process develop further support for Industrial Carbon Capture (ICC) for the additional carbon capture of industrial emissions to achieve 6 MtCO2 p.a. in total by 2030. Note that this scenario is the additional capture needed (after the Track-1 Cluster Sequencing scenario) and will not achieve the NZS ambitions without the scenario above. As such, it relies upon the delivery mechanisms set out under the Track 1 ICC sequencing process row.</p> <p>This is planned to be delivered via Track 2 of CCUS Cluster Sequencing process and expansion of Track-1 clusters. We plan to set out a vision for the UK CCUS sectors in 2023 to raise confidence and improve visibility for investors.</p>	0.000	3.0	5.1	Mid CB5
67	Industry	Industrial Carbon Capture Business Models for the additional carbon capture of industrial emissions needed to achieve 10 MtCO2 p.a. in total by 2035	<p>Business model for Industrial Carbon Capture (ICC) support needed to achieve 10 MtCO2 p.a. in total by 2035. This includes the ambition to capture and store 9MtCO2pa of industrial emissions by 2035, as set out in the Net Zero Strategy. It is anticipated that an additional 1MtCO2pa could, if required, be delivered by industrial carbon capture, but the best mechanism for doing so remains under review. We will work to evolve the business model and allocation process to enable us to contribute and deliver these long-term ambitions. Note that this scenario is the additional capture needed (after the 6 Mt ambition) and will not achieve the NZS ambitions without the scenario above. As such, it relies upon the delivery mechanisms set out under the Track 1 ICC sequencing process and Track 2/Track 1 expansion rows. Updated business model contracts with further technical contractual drafting are planned to be published in 2023.</p>	0.000	0.3	3.6	Mid CB5

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68	Industry	Industrial Energy Transformation Fund	The Industrial Energy Transformation Fund (IETF) supports industrial sites with high energy use to transition to a low carbon future. The fund targets existing industrial processes, helping industry to cut energy bills by investing in more efficient technologies and reduce emissions by bringing down the costs and risks associated with investing in deep decarbonisation technologies. Grant funding is allocated through a competitive process aimed at supporting the highest quality and most transformational bids. The fund is open to a broad range of industrial sectors of all sizes and will support applicants based in England, Wales, and Northern Ireland, both within and outside of industrial clusters. Phase 2 of the Fund closed to new applications in February 2023. Note: The average annualised carbon savings presented in this table are not included in the EEP and are therefore in addition to those stated in table 4. Carbon savings associated with newly committed funding to extend the IETF for a Phase 3 round of applications are not included.	0.1	0.2	0.2	2022
69	Industry	Steel Sector Decarbonisation	Proposal for steelmaking to be carried out through electrification by 2035 with recycled steelmaking supplemented with ore-based iron imports. Limited near-term savings are achieved through existing policies. The proposal could potentially be developed further to replace ore-based iron imports with domestic near-zero hydrogen iron-making as the next step process.	0.3	7.6	10.3	2023
70	Industry	Industrial Non-Road Mobile Machinery Decarbonisation	Publish an industrial non-road mobile machinery (NRMM) strategy to ensure that emissions savings are delivered. The strategy will set out how the sector can decarbonise while maintaining competitiveness, attracting investment and supporting growth. To deliver the strategy, government is developing its evidence base on NRMM decarbonisation options through ongoing	1.0	2.5	4.5	End CB4

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			external research and a call for evidence planned for late 2023. Government has made support available for NRMM decarbonisation through schemes such as the £40m Red Diesel Replacement competition, the Industrial Energy Transformation Fund (IETF), and the Renewable Transport Fuel Obligation (RTFO).				
71	Industry	Industrial Fuel Switching - Electricity	<p>We expect our ambition to achieve 50TWh of industrial fuel switching to low carbon fuels by 2035 primarily to be reached via switching from fossil fuels to electricity and hydrogen. Bioenergy is an additional fuel source that could enable carbon savings where other low carbon alternatives aren't available or through BECCS to generate negative emissions. The split will depend on the availability, cost and technical feasibility of the various fuel switching options. We will explore measures to address barriers inhibiting the switch away from fossil fuels to electricity, including capital and operational costs such as the fuel cost barrier, through publishing a call for evidence in 2023. The call for evidence will seek industry's, and other stakeholders', views on overcoming barriers to electrification. This is part of a broader policy package to reach industrial fuel switching target of 50TWh low carbon fuels by 2035.</p> <p>The savings represented in rows 71/72/73 are the collective result of the policies on those rows, so should be treated as a single figure from three sets of individual fuel switching policies, and should not be summed together.</p>	0.1	2.3	7.6	2025-2027

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
72	Industry	Industrial Fuel Switching - Hydrogen	<p>We expect our ambition to achieve 50TWh of industrial fuel switching to low carbon fuels by 2035 primarily to be reached via switching from fossil fuels to electricity and hydrogen. Bioenergy is an additional fuel source that could enable carbon savings where other low carbon alternatives aren't available or through BECCS to generate negative emissions. The split will depend on the availability, cost and technical feasibility of the various fuel switching options.</p> <p>Having published our response to the call for evidence on 'Enabling or requiring hydrogen-ready industrial boiler equipment', we will sponsor the BSI to ensure that hydrogen-ready industrial-sized boiler equipment is covered by a Publicly Available Specification (PAS). This will help establish best practice for the production and installation of hydrogen ready equipment, designed to facilitate a switch to low carbon hydrogen. We will explore further measures to incentivise fuel switching through regulating out the use of unabated fossil fuels in industry. Measures under consideration include product regulation, environmental permitting, or a combination of the two. Any potential measures taken forward will be designed through consultation with relevant industries and stakeholders.</p> <p>The savings represented in rows 71/72/73 are the collective result of the policies on those rows, so should be treated as a single figure from three sets of individual fuel switching policies, and should not be summed together.</p>	0.1	2.3	7.6	2025-2027

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
73	Industry	Industrial Fuel Switching - Biomass	<p>We expect our ambition to achieve 50TWh of industrial fuel switching to low carbon fuels by 2035 primarily to be reached via switching from fossil fuels to electricity and hydrogen. However, bioenergy is an additional fuel source that could enable carbon savings where other low carbon alternatives are not available or through BECCS to generate negative emissions. The split will depend on the availability, cost and technical feasibility of the various fuel switching options.</p> <p>We will explore measures to direct the use of biomass, a limited resource, within the industrial sector to achieve industrial decarbonisation. The upcoming Biomass Strategy, due for publication in 2023 Q2, will review the amount of sustainable biomass available to the UK and how this resource could be best utilised across the economy. The outcomes of the strategy will guide the next stage where we will develop a policy package that strives to make best use of biomass as a transitional fuel, and generate negative emissions in combination with bioenergy with carbon capture and storage (BECCS).</p> <p>The savings represented in rows 71/72/73 are the collective result of the policies on those rows, so should be treated as a single figure from three sets of individual fuel switching policies, and should not be summed together.</p>	0.1	2.3	7.6	End CB4
74	Industry	Industrial Resource Efficiency	<p>This is a proposal in an early stage of development, but government has recognised the importance of Industrial Resource Efficiency (RE) as a decarbonisation lever in HMG's Industrial Decarbonisation and Net Zero Strategies (2021). Research is underway to identify the full range of Industrial Resource Efficiency measures that, if</p>	1.2	5.6	7.0	2025-2027

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			implemented, could deliver against the modelled RE emissions savings in the Net Zero Pathway. We are supporting greater collaboration across government departments to accelerate and co-ordinate actions to encourage reuse, recycling, repair, remanufacture, and material substitution, supporting the development of new resource efficient business models.				
75	Industry	Industrial Energy Efficiency	This is a proposal in an early development stage that will look to tackle multiple barriers that businesses face to investing in energy efficiency measures with limited near term savings achieved through existing policies. This is in order to deliver wider HMG ambitions on Net Zero and energy security and the recently announced target to reduce total UK energy demand by 15% from 2021 levels by 2030. As part of this, we intend to launch a pilot which will offer advice, energy audits and grants to 4000 SMEs. The pilot will allow us to learn lessons and gather evidence to inform future policy making, and reduce energy use delivering bill savings.	0.7	2.5	2.8	2025-2026
76	Industry	Non Domestic Energy Performance Certificate (EPC) - Private Rented Sector	The government has consulted on proposals for the private rented sector and will publish the government response in due course.	0.044	0.1	0.1	Late CB4 subject to consultation response
77	Industry	Non Domestic Energy Performance Certificate (EPC) - Point of Purchase	We will consider how we can further support greater energy efficiency in owner occupied commercial buildings.	0.068	0.2	0.4	Late CB4 subject to consultation

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78	Industry	Phasing Out Fossil Fuels in Off Gas Grid Industrial Buildings	The government consulted on proposals in late 2021 and will publish the government response in due course.	0.006	0.080	0.2	Late CB4, subject to consultation response
79	Industry	Energy Saving Opportunity Scheme Improvements (Industrial Buildings)	A mandatory energy assessment scheme for large UK industrial businesses' energy use opportunities at least every four years, intended to identify practicable and cost-effective energy saving opportunities. ESOS is to be strengthened through the Energy Security Bill. The key changes are to strengthen requirements for audits and make them more standardised, to improve the quality of ESOS audits e.g. through better oversight of assessors and to require additional public disclosures from the audits. We have also announced the introduction for the next ESOS phase a requirement for the audits to include a net zero element and are sponsoring new PAS standard. Through the consultation we also sought views on the potential expansion to a wider range of businesses and requiring mandatory implementation of recommendations, which we are considering as options for future phases of ESOS.	0.004	0.000	0.000	2023
80	Industry	Phasing Out Fossil Fuel Systems in Non-Domestic Buildings on the Gas Grid (base high electrification scenario) The "base high electrification scenario" should be taken in addition to one of the	There will be a need to phase out fossil fuel systems in non-domestic building on the gas grid. The policy is split across four lines to represent various options to electrify heat or deploy hydrogen. High electrification scenario: This is a modelled scenario for emission savings for policies to phase out fossil fuel heated systems in non-domestic buildings on the gas grid. There are a range of measures which would be subject to future consultation. For 2030 onwards, there are	0.000	0.2	0.2	2029

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		following three scenarios: - High electrification scenario - High hydrogen scenario - Medium hydrogen scenario	three different scenarios with involving a different balance of deploying hydrogen and electrification. This is because if more hydrogen heating is rolled out, then less electrification (i.e. fewer heat pumps) are required to achieve the same carbon savings. To capture the full picture, this policy should be captured with one of the scenario policies listed below. - Assumes the deployment of little to no hydrogen, alongside heat pumps post 2030. - Assumes the deployment of a "High" level of hydrogen alongside heat pumps post 2030. - Assumes the deployment of a "Medium" level of hydrogen alongside heat pumps post 2030. The non-traded emissions are the same in each scenario but the traded emissions and hydrogen demand will change. Hydrogen scenario is dependent on the domestic hydrogen scenario.				
81	Industry	Phasing Out Fossil Fuel Systems in Industrial Buildings on the Gas Grid (high electrification scenario) - in addition to the "base electrification scenario"	There will be a need to phase out fossil fuel systems in industrial buildings on the gas grid. The policy is split across four lines to represent various options to electrify heat or deploy hydrogen. High electrification scenario: This represents early stage policies that to grow the heat pump market in industrial buildings on the gas grid to the extent that would be required in a high-electrification scenario (where hydrogen plays a limited or no role in heating). We will seek to grow the market and transition consumers, while continuing to follow natural replacement cycles to work with the grain of consumer behaviour. For industrial buildings, we could focus initially on key segments of the building stock, for example based on tenure or building use.	0.000	0.2	0.8	2030

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82	Industry	Phasing Out Fossil Fuel Systems in Non-Domestic Buildings on the Gas Grid - "high hydrogen scenario" (in addition to the "base electrification scenario")	<p>There will be a need to phase out fossil fuel systems in non-domestic industrial buildings on the gas grid. The policy is split across four lines to represent various options to electrify heat or deploy hydrogen.</p> <p>High hydrogen scenario: This represents early stage policies in a high hydrogen scenario would be taken in addition to base high electrification scenario measures to grow the heat pump market) in order to roll out hydrogen for heat to the extent required in a high hydrogen scenario. To note, a high hydrogen scenario would require chosen policy mechanisms to deliver a more extensive rollout of hydrogen for heat than in a medium hydrogen scenario.</p>	0.000	0.1	0.7	2030
83	Industry	Phasing Out Fossil Fuel Systems in Non-Domestic Buildings on the Gas Grid - "medium hydrogen scenario" (in addition to the "base electrification scenario")	<p>There will be a need to phase out fossil fuel systems in non-domestic industrial buildings on the gas grid. The policy is split across four lines to represent various options to electrify heat or deploy hydrogen.</p> <p>Medium hydrogen scenario: This represents early stage policies which in a medium hydrogen scenario would be taken in addition to the base electrification scenario above (measures to grow the heat pump market) in order to roll out hydrogen for heat to the extent required in a medium hydrogen scenario. To note, a medium hydrogen scenario would require chosen policy mechanisms to deliver a less extensive rollout of hydrogen for heat than in a high hydrogen scenario.</p> <p>The non-traded emissions are the same in each scenario but the traded emissions and hydrogen demand will change. Hydrogen scenario is dependent on the domestic hydrogen scenario.</p>	0.000	0.1	0.7	2030

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84	Buildings	Non Domestic Energy Performance Certificate (EPC) - Private Rented Sector	The government has consulted on proposals for the private rented sector and will publish the government response in due course.	0.2	0.4	0.4	Late CB4 subject to consultation response
85	Buildings	Non Domestic Energy Performance Certificate (EPC) - Point of Purchase	We will consider how we can further support greater energy efficiency in owner occupied commercial buildings.	0.083	0.3	0.5	Late CB4 subject to consultation
86	Buildings	Building Regulations - Part L Interim Uplift 2021 for Existing and New Non-Domestic buildings	An uplift to the energy efficiency standards for non-domestic buildings was implemented in December 2021 and came into force in June 2022, delivered through changes to the Building Regulations and publication of statutory guidance.	-0.034	-0.060	-0.076	2022
87	Buildings	Phasing Out Fossil Fuels in Off Gas Grid Non-Domestic Buildings	The government consulted on proposals in late 2021 and will publish the government response in due course.	0.012	0.081	0.1	Late CB4, subject to consultation response
88	Buildings	Energy Saving Opportunity Scheme Improvements (Buildings)	A mandatory energy assessment scheme for large UK commercial businesses' energy use opportunities at least every four years, intended to identify practicable and cost-effective energy saving opportunities. ESOS is to be strengthened through the Energy Security Bill. The key changes are to strengthen requirements for audits and make them more standardised, to improve the quality of ESOS audits e.g. through better oversight of assessors and to require additional public disclosures from the audits. We have also announced the introduction for the next ESOS phase a requirement for the audits to include a net zero element and are sponsoring new PAS standard. Through the consultation we also	0.046	0.031	0.031	2023

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			sought views on the potential expansion to a wider range of businesses and requiring mandatory implementation of recommendations, which we are considering as options for future phases of ESOS.				
89	Buildings	Phasing Out Fossil Fuel Systems in Non-Domestic Buildings on the Gas Grid (base high electrification scenario) The "base high electrification scenario" should be taken in addition to one of the following three scenarios: - High electrification scenario - High hydrogen scenario - Medium hydrogen scenario	There will be a need to phase out fossil fuel systems in non-domestic building on the gas grid. The policy is split across four lines to represent various options to electrify heat or deploy hydrogen. High electrification scenario: This is a modelled scenario for emission savings for policies to phase out fossil fuel heated systems in non-domestic buildings on the gas grid. There are a range of measures which would be subject to future consultation. For 2030 onwards, there are three different scenarios with involving a different balance of deploying hydrogen and electrification. This is because if more hydrogen heating is rolled out, then less electrification (i.e. fewer heat pumps) are required to achieve the same carbon savings. To capture the full picture, this policy should be captured with one of the scenario policies listed below. - Assumes the deployment of little to no hydrogen, alongside heat pumps post 2030. - Assumes the deployment of a "High" level of hydrogen alongside heat pumps post 2030. - Assumes the deployment of a "Medium" level of hydrogen alongside heat pumps post 2030. The non-traded emissions are the same in each scenario but the traded emissions and hydrogen demand will change. Hydrogen scenario is dependent on the domestic hydrogen scenario.	0.000	0.4	0.4	2028

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
90	Buildings	Phasing Out Fossil Fuel Systems in Non-Domestic Buildings on the Gas Grid (high electrification scenario) - in addition to the "base electrification scenario"	<p>There will be a need to phase out fossil fuel systems in non-domestic building on the gas grid. The policy is split across four lines to represent various options to electrify heat or deploy hydrogen.</p> <p>High electrification scenario: This represents early stage policies that to grow the heat pump market in non-domestic buildings on the gas grid to the extent that would be required in a high-electrification scenario (where hydrogen plays a limited or no role in heating). We will seek to grow the market and transition consumers, while continuing to follow natural replacement cycles to work with the grain of consumer behaviour. For non-domestic buildings, we could focus initially on key segments of the building stock, for example based on tenure or building use.</p>	0.000	0.4	2.0	2030
91	Buildings	Phasing Out Fossil Fuel Systems in Non-Domestic Buildings on the Gas Grid - "high hydrogen scenario" (in addition to the "base electrification scenario")	<p>There will be a need to phase out fossil fuel systems in non-domestic building on the gas grid. The policy is split across four lines to represent various options to electrify heat or deploy hydrogen.</p> <p>High hydrogen scenario: This represents early stage policies in a high hydrogen scenario would be taken in addition to base high electrification scenario measures to grow the heat pump market) in order to roll out hydrogen for heat to the extent required in a high hydrogen scenario. To note, a high hydrogen scenario would require chosen policy mechanisms to deliver a more extensive rollout of hydrogen for heat than in a medium hydrogen scenario.</p>	0.000	0.4	1.8	2030

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92	Buildings	Phasing Out Fossil Fuel Systems in Non-Domestic Buildings on the Gas Grid - "medium hydrogen scenario" (in addition to the "base electrification scenario")	<p>There will be a need to phase out fossil fuel systems in non-domestic building on the gas grid. The policy is split across four lines to represent various options to electrify heat or deploy hydrogen.</p> <p>Medium hydrogen scenario: This represents early stage policies which in a medium hydrogen scenario would be taken in addition to the base electrification scenario above (measures to grow the heat pump market) in order to roll out hydrogen for heat to the extent required in a medium hydrogen scenario. To note, a medium hydrogen scenario would require chosen policy mechanisms to deliver a less extensive rollout of hydrogen for heat than in a high hydrogen scenario.</p> <p>The non-traded emissions are the same in each scenario but the traded emissions and hydrogen demand will change. Hydrogen scenario is dependent on the domestic hydrogen scenario.</p>	0.000	0.4	1.8	2030
93	Buildings	Private Rented Sector Minimum Energy Efficiency Regulations	Proposals to strengthen the Minimum Energy Efficiency Standard Regulations for the domestic Private Rented Sector in England and Wales to EPC Band C by 2025 for new tenancies and 2028 for all tenancies. We will publish a summary of responses to the consultation on improving the energy performance of privately rented homes. Note: these savings reflect the consultation stage IA published in September 2020; the estimated carbon savings will be updated once final policy decisions have been made.	0.4	1.4	1.3	2026
94	Buildings	Regulations to Introduce Social Rented Sector Minimum Energy Efficiency Standards	Early stage proposal to develop regulations to introduce Social Rented Sector (SRS) Minimum Energy Efficiency Standards (MEES), subject to consultation. Following the 2020 Social Housing White Paper, the 2021 Heat and Buildings Strategy committed government to consider	0.000	0.022	0.070	CB5

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			setting a new regulatory standard of EPC Band C for the social rented sector. We have committed to begin the consultation process on a minimum energy efficiency standard for the social rental sector, within six months of the Social Housing Regulation Bill receiving Royal Assent.				
95	Buildings	Improving Home Energy Performance through Lenders	Take action following a government consultation on proposals for mortgage lenders to support homeowners to improve the energy performance of their properties. A government response will be published by the end of 2023. Note: these savings reflect the consultation stage IA published in November 2020; the estimated carbon savings will be updated once final policy decisions have been made.	0.6	1.5	1.6	2023
96	Buildings	Phasing Out Fossil Fuels in Off Gas Grid Homes	The government consulted on proposals in late 2021 and will publish the government response in due course.	0.052	1.4	3.4	Late CB4, subject to consultation response
97	Buildings	Future Homes Standard	Regulations from 2025 through the Future Homes Standard to ensure all new homes are ready for net zero by having a high standard of energy efficiency and low carbon heating installed as standard. The technical detail is subject to consultation.	0.3	1.0	1.3	2025
98	Buildings	Building Regulations - Part L new Domestic Interim Uplift	Uplift to the energy efficiency standards for new domestic buildings, delivered through changes to the Building Regulations and publication of new statutory guidance. The standard applies when certain building works take place.	0.4	1.0	1.0	2022
99	Buildings	Building Regulations - Part L Interim Uplift 2021 for Existing Domestic	Uplift to the energy efficiency standards for existing domestic buildings, delivered through changes to the Building Regulations and publication of new statutory guidance.	0.054	0.1	0.2	2023

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100	Buildings	Local Authority Delivery Scheme - Phase 3	LAD 3 to raise the energy efficiency of low income and low energy performance homes with a focus on energy performance certificate (EPC) ratings of E, F or G. LAD 3 allocated £286.8m to Local Authorities (2022-2023).	0.017	0.016	0.016	2022
101	Buildings	Home Upgrade Grant - Phase 1	Up to £218m of grant funding for local authorities to improve the energy performance and heating systems of low income households living off the gas grid in England (2022-2023). Will achieve carbon saving through energy demand reduction in homes and transition from fossil fuel to low carbon heating. Scheme in delivery.	0.014	0.014	0.014	2022
102	Buildings	Home Upgrade Grant - Phase 2	Up to £630m in grant funding for local authorities to improve the energy performance and heating systems of low income households living off the gas grid in England (2023-2025). Will achieve carbon saving through energy demand reduction in homes and transition from fossil fuel to low carbon heating.	0.042	0.046	0.045	2023
103	Buildings	Home Upgrade Grant - Consumer Led Route (pilot)	Up to £100m of funding for eligible consumers to improve the energy performance and heating systems of off gas grid homes in England. Importantly, it would use an assessment of household income in order to approve eligibility. Scheme is at the policy development stage and is anticipated to be launched in financial year 24/25.	0.003	0.005	0.005	2025
104	Buildings	Great British Insulation	The £1 billion Great British Insulation scheme (formerly ECO+) will see hundreds of thousands of homes across the country receive new home insulation, saving consumers around £310 a year. The Great British Insulation scheme will extend support to those in the least energy efficient homes in the lower Council Tax bands, as well as targeting the most vulnerable	0.1	0.2	0.1	2023

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105	Buildings	Social Housing Decarbonisation Fund - Wave 1	The government launched Wave 1 of the SHDF in August 2021. It has awarded around £179m of grant funding for delivery from 2022 into 2023, and will see energy performance improvements to up to 20,000 social housing properties.	0.013	0.013	0.013	2022
106	Buildings	Social Housing Decarbonisation Fund - Wave 2	£800m has been committed for the SHDF as part of the 2021 Spending Review settlement. The Wave 2.1 competition, which closed on 18 November 2022, will look to allocate up to £800m of grant funding to support the installation of energy performance measures in social homes in England. Successful projects are likely to be notified in March 2023. Delivery will continue until 2025.	0.041	0.045	0.045	2023
107	Buildings	Social Housing Decarbonisation Fund - Future Phases (Wave 3 & 4)	The funding will upgrade a significant amount of the social housing stock currently below EPC C up to that standard, delivering warmer and more energy-efficient homes, reducing carbon emissions and bills, and tackling fuel poverty as well as supporting green jobs.	0.070	0.3	0.3	2025
108	Buildings	Clean Heat Market Mechanism	A new market-based incentive for heating appliance manufacturers, similar to obligations in sectors such as low-emissions vehicles and renewable electricity generation, to support investment in increasing the proportion of low-carbon heating appliances installed relative to fossil fuel boilers over the years 2024 to 2028.	0.3	1.2	1.2	2024
109	Buildings	Heat Network Market Framework	The Heat Networks Regulation will use new primary legislation to appoint Ofgem as the heat network regulator in GB and the CCNI in NI. Under this system of regulation consumers will be given equivalent levels of protection to those on electricity and gas with new regulatory powers to ensure all consumers are treated fairly and networks are run to high standards. We will also help operators run their heat networks as cost-efficiently as possible, delivering further savings	0.064	0.2	0.4	2024

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			for consumers and government will have powers to regulate the carbon emissions of heat networks so that they meet their 2050 net-zero target. Finally, it will make it easier for investors to enter the sector and level the playing field with other utilities.				
110	Buildings	Green Heat Networks Fund - Extension	The Green Heat Network Fund (GHNF) is an existing capital grant support programme available for the development of new and existing low and zero-carbon heat networks within the current SR. This is a proposal to extend capital support to continue to grow the heat networks market. Carbon savings are achieved by displacing existing fossil fuel heating systems with heat networks supplied by low carbon sources which is achieved through competitive funding rounds and scheme design.	0.014	0.2	0.3	2025
111	Buildings	Consumer information & advice (former Simple Energy Advice)- Enhancement	A “minimum viable product” one-stop shop where you can connect your EPC to your home and get bespoke advice on energy efficiency. The next stage will be to connect that advice to the government-funded schemes such as the Home Upgrade Grant and ECO.	0.007	0.007	0.005	2023
112	Buildings	Heat Network Zoning	Through new powers in the Energy Bill, Heat Network Zoning will be introduced by no later than 2025. Zoning will involve the identification and designation of areas where heat networks are expected to be the lowest cost solution for decarbonising heat. Carbon savings are achieved by displacing existing fossil fuel heating systems with heat networks supplied by low carbon sources.	0.3	1.4	2.7	2025
113	Buildings	Heat Network Efficiency Scheme - Main	The Heat Network Efficiency Scheme (HNES) will provide grant funding to existing heat network projects in England and Wales, in order to address customer detriment and deliver network efficiency improvements. The scheme grant	0.008	0.009	0.009	2023

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			budget is £32m, with eight funding windows planned across 23/24 and 24/25.				
114	Buildings	Heat Network Efficiency Scheme - Extension	The Heat Network Efficiency Scheme (HNES) is an existing capital support programme that supports performance improvements to existing heat networks or communal heating projects within the current Spending Review period. This is a proposal to extend capital support to continue to support performance improvements in future years, subject to future Spending Reviews.	0.002	0.007	0.007	2025
115	Buildings	Energy-related Product Standards - Minimum Energy Efficiency Standards for Domestic Cooking Appliances	Ecodesign regulation to raise minimum energy performance standards for domestic cooking appliances (ovens and hobs) in order to phase out the worst performing appliances as the market towards more efficient and low carbon products, subject to consultation.	0.077	0.4	0.7	2025
116	Buildings	Energy-related Product Standards - Improved Information on Energy Labels including Lifetime Costs etc. (non-traded sector impact)	Improved information about energy consumption of energy using products provided on energy labels in order to allow consumers to make informed purchases and buy the most energy efficient products.	0.4	0.4	0.4	2025
117	Buildings	Energy-Related Product Standards - Minimum Energy Efficiency Standards for Non-Domestic Cooking Appliances	Ecodesign regulation to introduce minimum energy performance standards for non domestic cooking appliances, subject to consultation.	0.038	0.2	0.3	Second half of CB4
118	Buildings	Energy-Related Product Standards	Update to energy efficiency requirements and introduction of resource efficiency requirements for a range of products (starting with lighting and space heating appliances) following the work of the Energy-related Product Policy Framework,	0.091	0.6	1.1	2025

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			which identified a range of products with high potential for additional energy efficiency gains as well as other mitigation of other environmental impacts.				
119	Buildings	Boiler Efficiency Standards	A package of measures to improve domestic gas boiler heating system efficiency. The policy is aimed at ensuring gas boilers are operating at their best after they have been fitted into homes, through a combination of energy saving technologies, better boiler product standards and supporting improved design and maintenance of heating distribution systems, following consultation in December 2022. This builds on the previous standards for domestic gas boilers, the Boiler Plus Standards, that were introduced in England in 2018.	0.2	0.8	1.1	2025
120	Buildings	Gasification Biomethane to the Grid	Drive forward commercial-scale gasification given its potential for biomethane production. The proposal is at an early stage of policy development and would be subject to consultation.	0.000	0.3	0.8	Early CB5
121	Buildings	Biomethane - Future Support	Create a policy framework to deliver increased production of biomethane and associated carbon savings, subject to consultation. This will follow the current Green Gas Support Scheme (GGSS) and increase the amount of biomethane injected into the gas grid.	0.010	0.5	0.8	2026
122	Buildings	Public Sector Decarbonisation Scheme - Future Phases	Future phases of the PSDS scheme, with the aim of reducing direct emissions from public sector buildings by 75% by 2037. Mechanism for delivery is a 2021-2032 grant scheme for Public Sector Organisations to decarbonise their heat and install energy efficiency measures.	0.5	2.7	5.0	2025

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123	Buildings	Additional Retrofit Heat Pump Installations (2029 to 2037)- "High Electrification" Scenario Only	<p>Part of the 'high electrification' pathway, requiring an increase in heat pump installations.</p> <p>Drive forward mechanisms to increase the retrofitting of existing properties. Delivery mechanisms under consideration include capital schemes to support consumers, regulation to better incentivise industry and other methods of building the supply chain for heat pump manufacturing and installation.</p>	0.000	3.3	15.4	2029
124	Buildings	Hydrogen Heating Deployment - "High Hydrogen" Scenario Only	<p>Part of the "high hydrogen" scenario in which hydrogen makes up a large proportion of the mix of clean heat technology.</p> <p>The gas grid could be converted to handle hydrogen for heat (domestic & non-domestic) required in high hydrogen scenario, in order for hydrogen heating to contribute to the replacement of the incumbent technology of natural gas for heating to deliver carbon savings.</p>	0.000	0.7	9.0	2030
125	Buildings	Additional On Gas Grid Heat Pumps (2029 to 2037) - "High Hydrogen" Scenario Only	<p>Part of the "high hydrogen" scenario in which hydrogen makes up a large proportion of the mix of clean heat technology.</p> <p>For all hydrogen scenario policies: The deployment of heat pumps beyond 2028 will depend on wider commercial factors such as the cost of heat pumps (both their upfront costs and running costs) and the successful commercialisation of hydrogen to heat buildings - as well as continued government action through a range of measures. Heat pump deployment is lower in a scenario of greater hydrogen uptake. Government is planning to take a strategic decision on the role of hydrogen heating in 2026.</p>	0.000	2.6	6.2	2029

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126	Buildings	Hydrogen heating deployment - "Medium Hydrogen" Scenario Only	Part of the "medium hydrogen" scenario in which hydrogen makes up a medium proportion of the mix of clean heat technology. Convert the gas grid to handle hydrogen for heat (domestic & non-domestic) required in medium hydrogen scenario, in order for hydrogen heating to contribute to the replacement of the incumbent technology of natural gas for heating to deliver carbon savings.	0.000	0.5	5.0	2030
127	Buildings	Additional On Gas Grid Heat Pumps (2029 to 2037) - "Medium Hydrogen" Scenario Only	Part of the "medium hydrogen" scenario in which hydrogen makes up a medium proportion of the mix of clean heat technology.	0.000	2.7	10.3	2029
128	Domestic Transport	Accelerated Transition to Zero Emission Cars	The zero emissions vehicle (ZEV) mandate will set targets for a percentage of manufacturers' new car sales to be zero emission each year from 2024; alongside regulations that will require non-ZEV emissions to not worsen.	0.3	5.1	16.0	2024
129	Domestic Transport	Accelerated Transition to Zero Emission Vans	The ZEV mandate will set targets for a percentage of manufacturers' new van sales to be zero emission each year from 2024; alongside regulations that will require non-ZEV emissions to not worsen.	0.6	3.5	7.4	2024
130	Domestic Transport	Accelerated Transition to Zero Emission Medium- and Heavy-Goods Vehicles (MHGVs)	The policy comprises a range of measures to support UK road freight's transition to net zero, including removing barriers to the uptake of zero emission medium and heavy goods vehicles, the Zero Emission Road Freight Demonstrator programme, financial incentives, and updating and introducing MHGV regulation aimed at delivering the 2035 phase out date for the sale of new, non-zero emission MHGVs 26 tonnes and under, and increased support for uptake in the interim.	0.1	1.6	5.4	2026

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131	Domestic Transport	Accelerated Transition to Zero Emission Buses (ZEBs), Coaches and Minibuses	The policy comprises a range of funding measures to support the ZEB markets, and policy/regulation to ensure in-scope zero emission vehicles are deployed at pace. Funding includes that delivered through the ZEB Regional Area Scheme and the All-Electric Bus City initiative. Following a consultation in Spring 2022, government will announce an end date for the sale of new non ZEBs in due course. Take further action following recent calls for evidence on the decarbonisation of coaches and minibuses.	-0.001	0.3	0.9	2027
132	Domestic Transport	Accelerated Transition to Zero Emission L-Category Vehicles	End the sale of new non-zero emission light-powered two, three and four wheeled (L-category) vehicles following government consultation held in 2022.	0.002	0.039	0.1	2026
133	Domestic Transport	Accelerating fleet turnover	This proposal requires further development. There are a number of potential national and local policy levers that could encourage vehicle owners to move towards cleaner vehicles faster than currently anticipated should this be required to stay on track to meet carbon budget obligations.	0.000	2.6	3.6	CB5
134	Domestic Transport	Efficiency improvements to ICEV new sales and plug-in hybrid electric vehicle (PHEV) fleet	This proposal requires further development. PHEV performance could be improved through targeted technological improvements and changes in real-world use. We will consider different levers that could bring about such improvements, should this be required to stay on track to meet carbon budget obligations. Current projections assume limited improvements in the CO2 performance of internal combustion engine vehicles in the period of the ZEV mandate. Policy measures could be developed to incentivise consumers to opt for more fuel efficient (and lower CO2) petrol and diesel vehicles during this period.	0.000	0.5	1.0	CB5

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135	Domestic Transport	Increasing average road vehicle occupancy	This proposal requires further development. We will consider measures that could reverse recent trends in declining average road vehicle occupancy, bringing the UK more in line with comparable countries and reducing overall vehicle miles travelled, should this be required to stay on track to meet carbon budget obligations.	0.000	0.5	0.7	CB5
136	Domestic Transport	HGV and van logistics	This proposal requires further development. We will consider ensuring more support is available for HGV and van drivers to reduce total fuel used by HGV fleets, should this be required to stay on track to meet carbon budget obligations.	0.000	1.1	1.5	CB5
137	Domestic Transport	Greater decarbonisation of the rail network	This proposal requires further development. We will consider decarbonisation of the rail network beyond currently funded electrification schemes through additional electrification and deployment of alternative traction trains, should this be required to stay on track to meet carbon budget obligations and subject to future Spending Reviews.	0.008	0.058	0.2	CB5
138	Domestic Transport	Reduced Use of Urea and Liquid Petroleum Gas	This policy is not additional - these emissions savings result from other measures indirectly reducing the use of urea and liquid petroleum gas in road vehicles.	0.036	0.1	0.3	2024
139	Domestic Transport	Domestic Aviation Decarbonisation	Domestic aviation policy aligned with policy for international aviation, including rapid scale up of the use of Sustainable Aviation Fuels, introduction of zero emission aircraft from 2035, continued improvements in efficiencies of our airspace, aircraft and airports and carbon pricing. (See International Aviation section for more detail.)	0.029	0.093	0.2	2030

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140	Domestic Transport	High Annual Investment in Cycling and Walking Infrastructure and Policy	The second statutory Cycling and Walking Investment Strategy (CWIS2) and the government's Gear Change Plan include delivery of a range of capital and revenue funded projects to enable more cycling and walking in line with the July 2021 Transport Decarbonisation Plan commitment to 'deliver a world-class cycling and walking network in England by 2040'.	0.045	0.1	0.2	2020
141	Domestic Transport	Maritime Decarbonisation Across Vessels and Ports	The 'Course to Zero' consultation will inform development of indicative decarbonisation targets and policy interventions. We have consulted on expanding the UK ETS to domestic shipping and will publish a government response in due course. R&D funding is being delivered through the £206m UK Shipping Office for Reducing Emissions (UK SHORE) programme, including the Clean Maritime Demonstration Competition and the Zero Emission Vessels and Infrastructure (ZEVI) competition.	0.020	0.3	3.0	2022
142	Domestic Transport	Rail Electrification Schemes	This policy includes electrification of the Transpennine Route Upgrade (due for completion 2036-41), the Midland Mainline to Sheffield and Derby (completion date TBC), and the Wigan-Bolton line (due for completion 2024).	0.003	0.071	0.1	2024
143	IAS	International Maritime Decarbonisation	Pursue the ambitious emission reduction strategy and targets agreed at the International Maritime Organization (IMO) in 2018. The government is playing a leading role in calling for even greater ambition during negotiations at the IMO.	0.047	0.4	3.2	2022
144	Domestic Transport	Aircraft Support Vehicle Decarbonisation	This policy is not additional but is linked to delivery of the government's target for airport operations in England to be zero emission by 2040.	0.017	0.2	0.4	2026

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145	IAS	Increasing the Take Up of Sustainable Aviation Fuels	Promote the rapid scaling up of Sustainable Aviation Fuels (SAFs) in the aviation sector, in line with the high ambition scenario detailed in the Jet Zero Strategy, through the introduction of a SAF mandate. This policy will be supported by measures such as the £165m Advanced Fuels Fund and ongoing discussions with industry on action to tackle barriers to the production and use of SAF..	0.9	2.7	3.8	2025
146	IAS	Zero Emission Flight (ZEF) from 2035	Introduction of zero emission aircraft from 2035 in line with the high ambition scenario detailed in the Jet Zero Strategy. Government is promoting development of ultra-low and zero emission technologies through its funding to the Aerospace Technology Institute Programme.	0.000	0.000	0.1	2035
147	IAS	High Fuel Efficiency Savings in Operational Aircraft	Promote continued improvements in efficiencies of airspace, aircraft and airports as set out in the Jet Zero Strategy. Government is providing funding to support airspace modernisation and is promoting development of ultra-efficient aircraft technologies through its funding to the Aerospace Technology Institute Programme.	-0.003	0.3	1.3	2027
148	IAS	Carbon Pricing in Aviation	Introduce carbon pricing through the UK Emissions Trading Scheme and Carbon Offsetting Reduction Scheme for International Aviation (CORSIA) to incentivise in-sector reduction of emissions (e.g. through fuel efficiency, uptake of sustainable aviation fuels and zero emission flight). Carbon pricing assumptions in line with the high ambition scenario in the Jet Zero Strategy.	0.000	0.000	0.3	2036
149	Agriculture and LULUCF	Increase feed analysis and use of precision feeding to not exceed animal requirements.	Precision feeding involves the assessment of animal feed to ensure the composition and volume of feed meets, but does not exceed, animal requirements. This can reduce emissions and emissions intensity by maximising feed utilisation, stabilising fermentation in the stomach, improving animal health, and minimising nutrient	0.00186	0.01020	0.02815	2022

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			excretion in manure. It is expected that industry adoption of precision feeding will increase as a market-led take up of precision feeding is already occurring. The AIC (Agricultural Industries Confederation) maintains a register of accredited feed nutritionists to facilitate this by providing technical advice on best feeding practice. In addition, precision mixing machinery is available for the preparation of mixed rations. The role of government is in supporting and accelerating the take up of precision feeding. The government will provide funding under the Farming Innovation Programme, which could support the development of technology related to precision feeding,				
150	Agriculture and LULUCF	Use of methane suppressing feed products (e.g. 3NOP, nitrate additives) to reduce methane emissions from livestock.	Methane-suppressing feed products (for example 3NOP, nitrate additives) within feed rations to reduce the amount of methane produced by ruminant livestock (e.g. cattle). Food Standard Agency (FSA) and Food Standards Scotland (FSS) are responsible for the authorisation process of feed additives in Great Britain. We will continue to work with the FSA and FSS, industry and the sector to explore suitable policy options to encourage rapid and extensive uptake of methane suppressing feed products with proven safety and efficacy, including exploring mandating methane suppressing feed products in compound feed for cattle in England. We have already published research on these products and recently ran a call for evidence on methane suppressing feed products to better understand the opportunities and challenges associated with their use. This will inform our next steps to encourage the extensive update of methane suppressing feed products.	0.9	1.6	1.6	2022

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
151	Agriculture and LULUCF	Use of conventional breeding practices (not genomics or gene editing) to breed cattle that have reduced emissions.	Using conventional production focussed breeding metrics such as Estimated Breeding Value (EBV – which do not require gene editing or genetic modification) reduces emissions intensity in cattle, without compromising welfare or fertility. This process allows the identification of desirable genetic effects in individuals and enables cattle to be bred with lower rates of methane production. Continuing market-led uptake from farmers is expected. Ongoing research and development to improve breeding metric and measures such as funded annual animal health and welfare visits (to support improved fertility and reproduction rates) are expected to support that uptake.	0.01117	0.04487	0.1	2022
152	Agriculture and LULUCF	Increased milking frequency (using robotic milking systems not hormones).	Funding provided through Farming Investment Fund can help facilitate an increase in the rate of milk production, without the use of hormones, by moving from milking twice a day to three times a day, such as by supporting farmers to install robotic milking parlours and make changes to stock management (e.g., keeping cattle closer to the milking parlour).	0.00726	0.02707	0.07093	2022
153	Agriculture and LULUCF	Multi-purpose breeds or multi-use of cows - (milk, calves and meat).	Monitor current market-led initiatives to increase integration of beef and dairy production chains (via dual purpose breeds or increasing use of dairy/beef cross calves) explore government's potential role and policy options to support delivery of this measure should the market-led response not meet the required uptake levels or emissions savings.	0.06434	0.2	0.6	2022
154	Agriculture and LULUCF	Reducing emissions from cattle by improving animal health, delivered through tackling endemic disease.	This measure is part of Defra's Animal Health and Welfare Pathway (launched in 2022 to support the gradual and continual improvement in farm animal health and welfare) and will be delivered through the in-development disease eradication programme focusing on Bovine Viral Diarrhoea	0.02945	0.1	0.3	2022

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			(BVD) in England. Testing for BVD is also part of the recently launched Sustainable Farming Incentive Annual Health and Welfare Review which is the first step on the Pathway to improving the health of cattle herds across England.				
155	Agriculture and LULUCF	Reducing emissions from sheep by improving animal health, delivered through tackling endemic diseases.	This measure is part of Defra's Animal Health and Welfare Pathway (launched in 2022 to support the gradual and continual improvement in farm animal health and welfare) and will be delivered through the in-development disease reduction programme focusing on a range of diseases and conditions in sheep in England. Improving health of sheep can reduce emissions intensity by improving the efficiency of livestock production, through improved fertility, reducing mortality and morbidity. The recently launched Sustainable Farming Incentive Annual Health and Welfare Review will also improve sheep health by providing funding to test the effectiveness of worming treatments.	0.00591	0.02260	0.06066	2022
156	Agriculture and LULUCF	Using genetic testing (genomic tools) to develop improved livestock breeding goals and deliver permanent low emissions traits.	The measure involves improving breeding, using genetic testing (genomic tools), to ensure that breeding goals involve some low carbon traits. The measure involves farmers collecting performance information on the individual animals and genetic testing and feeding back this information to help with breeding goal development (the goals include lower methane emissions). Competitions in Defra's Farming Innovation Programme (FIP) are developing this measure ahead of further refinement of policy measures. NB. This measure shows carbon savings starting before the start date. While government action or support to deliver implementation at pace may not yet be in place, there is existing, market led, uptake across sectors to deliver emission reductions.	0.00019	0.00082	0.00339	2035

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			Additionally due to the significant lead in time for the projected savings to start, and the modelling system used, there may be minor emissions savings before the anticipated start year, e.g. due to proactive and engaged farmers and land managers taking steps themselves, ahead of policy.				
157	Agriculture and LULUCF	Covering slurry tanks with a retrofitted, permeable cover.	Regulations to mandate retrofitting slurry tanks with a permeable cover will reduce both methane and ammonia emissions, subject to consultation. In the short term, focus is on improving compliance and supporting take up through e.g., Countryside Stewardship slurry grants. NB. This measure provides carbon savings starting before the start date. While government action or support to deliver implementation at pace may not yet be in place, there is existing, market led, uptake across sectors to deliver emission reductions. Additionally due to the significant lead in time for the projected savings to start, and the modelling system used, there may be minor emissions savings before the anticipated start year, e.g., due to proactive and engaged farmers and land managers taking steps themselves, ahead of policy.	0.00003	0.00015	0.00043	2027
158	Agriculture and LULUCF	Covering slurry tanks with a retrofitted, impermeable cover.	Regulations to mandate retrofitting slurry tanks with an impermeable cover to reduce both methane and ammonia emissions. In the short term, focus is on improving compliance and supporting take up through e.g. grants provided through Farming Investment Fund Slurry Infrastructure Grant and Countryside Stewardship capital grants for slurry stores. NB. This measure provides carbon savings starting before the start date. While government action or support to deliver implementation at pace may not yet be in place, there is existing, market led, uptake across sectors to deliver emission reductions.	0.00991	0.05521	0.2	2023

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			Additionally due to the significant lead in time for the projected savings to start, and the modelling system used, there may be minor emissions savings before the anticipated start year, e.g. due to proactive and engaged farmers and land managers taking steps themselves, ahead of policy.				
159	Agriculture and LULUCF	Analyse manure prior to application to match crop requirements.	Analysing the nitrogen content of slurry, prior to application on crops and grassland, can improve nutrient management, ensuring nitrogen applications do not exceed crop requirements to minimise emissions of nitrous oxide (N2O). Increasing industry adoption is expected as part of a market-led take up of precision farming that is already occurring. Government will work with industry to identify the most appropriate mechanisms for change. We expect the Sustainable Farming Incentive (nutrient management standard) to contribute indirectly to this outcome.	0.00008	0.00032	0.00096	2022
160	Agriculture and LULUCF	Integrating grass/herbal leys in rotation in arable systems.	Leys are temporary grasslands made up of legume, grass and herb species. Diversification of arable cropping systems with grass/herbal leys can increase the positive effects of rotation practices. This measure reduces greenhouse gas emissions and emissions intensity by improving soil organic matter leading to positive impacts on crop yield, soil structure, resistance to erosion losses and could reduce nitrogen fertilizer application. Grass leys are also likely to reduce nitrogen leaching from the soil. This is included in the Sustainable Farming Incentive SFI (soils standards for SFI 2022). Once land is entered into the standard, the government will pay for the integration of multi-species cover crops including a mix of legume, grass and herb species. NB. This measure provides carbon savings starting before the start date. While government action or	0.00306	0.01310	0.04779	2024

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			support to deliver implementation at pace may not yet be in place, there is existing, market led, uptake across sectors to deliver emission reductions. Additionally due to the significant lead in time for the projected savings to start, and the modelling system used, there may be minor emissions savings before the anticipated start year, e.g. due to proactive and engaged farmers and land managers taking steps themselves, ahead of policy.				
161	Agriculture and LULUCF	Avoiding use of Nitrogen in excess through the development of an agronomist led nutrient management plan.	Support the use of nutrient management plans and manure management plans across the farming sector. To optimise the use of nitrogen and avoid excess application. Positive impacts include reduced Greenhouse Gas emissions from synthetic fertilisers and reduced energy use and leaching of nitrogen from the soil. This is included in the Sustainable Farming Incentive SFI (soils standards for SFI 2022, nutrients standard for 2023, and low/no input grassland standard for 2023) and is also partially covered by the Farming Rules for Water and Nitrate Vulnerable Zones regulations.	0.00144	0.00779	0.02102	2022
162	Agriculture and LULUCF	Improved crop health through improved pest and disease control practices.	Support improved crop health to increase yield quality and reduce yield losses, through the Sustainable Farming Incentive Integrated Pest Management actions and the Farming Innovation Programme. This reduces emissions through a reduced need for control agents, such as pesticides, and activities such as fuel used during pesticide application.	0.00035	0.00140	0.00433	2022
163	Agriculture and LULUCF	Improved farm fuel and energy efficiency.	Support reductions in farm non-traded carbon dioxide (CO2) emissions from motive power, pumps and drives. Actions include, amongst others, the use of minimum till, which can cultivate the land using mechanical measures other than ploughing to reduce soil disturbance, and the use of no till, which uses direct drilling methods	0.1	0.3	0.6	2022

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			instead of cultivation machinery, thereby reducing fuel emissions. Currently competitions in the Farming Innovation Programme (FIP) are developing this technology and equipment (for example electrified tractors and utility vehicles, the use of robots and low energy motors) and the Farming Investment Fund (FIF) is providing grants towards the purchase of relevant equipment.				
164	Agriculture and LULUCF	Biological fixation of nitrogen on grassland using grass-legume mixtures.	Increasing the inclusion of clover into pasture areas and ensuring the proportion of clover in the mixed grassland to at least 20%. Clover captures atmospheric nitrogen which is made available to pasture, reducing mineral fertiliser requirements and associated nitrous oxide (N2O) emissions. We are already seeing farmer led movement to more biological and on farm solutions to nutrients. Government will accelerate wider adoption by funding these actions through the Sustainable Farming Incentive (soils standards for SFI 2022 nutrients standard for SFI 2023) and Countryside Stewardship (GS4 Legume and herb-rich swards). We have conducted done co-design pilots, tests and trials with more than 5,000 farmers and other people, plus several stakeholder organisations since 2019. We plan to continue this in 2023. We've also created a single landing page on GOV.UK on funding for farmers.	0.02198	0.1	0.3	2022
165	Agriculture and LULUCF	Reseeding temporary pasture/forage crops with high sugar grass varieties.	Reseeding temporary pasture/forage crops with high sugar grass varieties. High sugar grasses have the potential to increase livestock's nitrogen usage efficiency. This reduces nitrogen lost through livestock urine and subsequent emissions to the environment. Government is considering the role in, and options for encouraging the	0.00337	0.01856	0.05139	2022

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			reseeding of temporary pasture/ forage crops with high sugar grass varieties.				
166	Agriculture and LULUCF	Use of plant biostimulants to promote growth and reduce emissions.	Use of plant biostimulants to promote growth and reduce emissions. Plant biostimulants are plant or soil additives that contain substances (microbial and non-microbial) that stimulate natural plant processes and can reduce greenhouse gas emissions intensity by increasing yield. Biostimulants may offer these productivity and resilience gains by enhancing nutrient uptake, nutrient efficiency, tolerance to environmental stress and crop quality. Regulation is in development to set consistent products standards. The evidence on the efficacy of Biostimulants is mixed, and so further research is required to allow for it to be integrated into the Sustainable Farming Incentive. Defra's Farming Innovation Programme (FIP) and agri-food evidence programme are developing evidence on novel fertilising products. NB. This measure shows carbon savings starting before the start date. While government action or support to deliver implementation at pace may not yet be in place, there is existing, market led, uptake across sectors to deliver emission reductions. Additionally due to the significant lead in time for the projected savings to start, and the modelling system used, there may be minor emissions savings before the anticipated start year e.g. due to proactive and engaged farmers and land managers taking steps themselves, ahead of policy.	0.00008	0.00037	0.00152	2030

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
167	Agriculture and LULUCF	Use of nitrification Inhibitors (chemical additives to fertilisers) to reduce nitrous oxide emissions.	Nitrification inhibitors are chemical additives that inhibit or delay biochemical processes that give rise to Greenhouse Gas emissions from fertiliser breakdown. Evidence is not yet robust enough on the case for direct government intervention. While nitrification inhibitors are currently available on the market, further research and evidence is needed for example on impacts and application rates. Defra's Farming Innovation Programme (FIP) and agri-food evidence programme are developing evidence on novel fertilising products to inform future policy and regulation development.	0.00646	0.02564	0.07833	2022
168	Agriculture and LULUCF	Reversing, reducing and preventing surface and subsoil soil compaction.	Promote reducing and remediating surface and subsoil compaction through the Sustainable Farming Initiative SFI and soil health measures in the Environmental Improvement Plan, alongside regulatory impacts from initiatives such as Farming Rules for Water. Compaction compromises the movement of the movement of air, water and nutrients within soil which can reduce crop yields and increase emissions.	0.02238	0.09603	0.2	2022
169	Agriculture and LULUCF	Improving/renovating land drainage on mineral soils (where drainage is poor).	Produce guidance on improving and renovating current land drainage (where drainage is poor) to improve crop yield and reduce Nitrous oxide (N2O) emissions.	0.00108	0.00447	0.01473	2022
170	Agriculture and LULUCF	Precision Farming (arable/grassland) using machine guidance and other technologies to control and adjust fertiliser application.	Support and accelerate the use of machine guidance (MG) and variable rate nitrogen application technologies (VRNT) in arable and temporary grassland field operations to help farmers reduce overlaps/avoids gaps and adjust the application rate of fertiliser to match need better in that precise location within the field in order to reduce Nitrous oxide (N2O) emissions. Funding is available for technology and equipment to facilitate this measure through the Farming Investment Fund and new	0.00559	0.02102	0.06084	2022

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			innovations are being supported through the Farming Innovation Programme.				
171	Agriculture and LULUCF	Maintain a soil pH that is optimum for crop or grass growth (e.g., liming).	Support and accelerate adoption of soil analysis for pH and carrying out soil liming (application of magnesium or calcium rich materials to soils) on arable grassland. The application of lime improves the soil pH on land which is below the optimal pH for crop or grass growth. This allows more carbon to be captured below ground through improved productivity and efficient use of nutrients from the soil. This is included in SFI soils standards for 2022, moorland standard for 2022, and nutrients standard for 2023.	0.02316	0.1	0.3	2022
172	Agriculture and LULUCF	Cultivating common crop varieties that have better nutrient uptake.	Support and accelerate the adoption of the cultivation of varieties of already common crops in the UK which use nitrogen more efficiently, reducing Nitrous oxide (N2O) emissions. Competitions in Farming Innovation Programme (FIP) are developing this technology and equipment. In addition, Defra's Genetic Improvement Networks (GINs) aim to improve the main UK crops by identifying genetic traits to improve their productivity, sustainability and resilience. Ongoing work in the Wheat GIN, including annual nitrogen diversity trials, is exploring nitrogen use efficiencies in different wheat varieties. NB. This measure shows carbon savings starting before the start date. While government action or support to deliver implementation at pace may not yet be in place, there is existing, market led, uptake across sectors to deliver emission reductions. Additionally due to the significant lead in time for the projected savings to start, and the modelling	0.00001	0.00007	0.00039	2034

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			system used, there may be minor emissions savings before the anticipated start year, e.g. due to proactive and engaged farmers and land managers taking steps themselves, ahead of policy.				
173	Agriculture and LULUCF	Growing cover crops within a rotation to maintain soil cover during fallow periods.	Support and accelerate adoption of such cover crops to ensure co-benefits (e.g. for nature and water quality, from the capture of carbon and the retention of nutrients) are realised. This is included in Sustainable Farming Incentive arable and horticultural soils standard for SFI 2022 and through Countryside Stewardship (SW6 Winter cover crops).	0.01021	0.05504	0.1	2022
174	Agriculture and LULUCF	Hedgerows.	Support farmers to create or restore at least 30,000 miles of managed hedgerows by 2037, increasing to a total of at least 45,000 miles of additional managed hedgerows by 2050 returning hedgerow lengths in England to 10% above the 1984 peak (360,000 miles). We will also support them to additionally restore degraded hedges across the country. These measures will increase carbon storage and sequestration. We have announced the inclusion of a hedgerow standard in the Sustainable Farming Incentive, expected to roll out in 2023.	0.01800	0.05000	0.09200	2022
175	Agriculture and LULUCF	Agroforestry. A combination of levers aiming to increase silvo-arable agroforestry to 10% of all arable land by 2050.	Agroforestry will be delivered through environmental land management schemes. Indicative launch date for agroforestry standard in Sustainable Farming Incentive is 2024, although this will not be confirmed until nearer the date. These measures will increase carbon storage and sequestration.	0.00000	0.01400	0.08800	2029
176	Agriculture and LULUCF	Increase tree canopy and woodland cover to 16.5% of total land area in England by 2050.	Through the England Trees Action Plan, supported by the Nature for Climate Fund (NCF), we have launched new grants and initiatives to support increased tree planting in England. These include the England Woodland Creation Offer, the	-0.00780	0.05240	0.3	2028

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			Community Forests Trees for Climate Programme and the establishment of Woodland Creation Partnerships in Cornwall and Northumberland. Tree planting and woodland creation was increased in England to c.2,700 hectares in 2021/22. The new environmental land management (ELM) schemes will deliver a large proportion of tree planting funding from 2025, when the NCF is due to end. Future woodland creation grants in ELM will mirror the EWCO. Landscape Recovery will support major landscape-scale afforestation projects where these deliver a wide range of environmental outcomes. NB. This measure has small negative carbon savings over CB4. This is due to operational emissions created during the creation of woodlands, for example from the machinery used and soil disturbance. Our tree-planting goals have a large impact on the longer term goals, as they will sequester more carbon the more they grow.				
177	Agriculture and LULUCF	Domestic planting of Perennial Energy crops (PECs) and Short Rotations Forestry. Increase planting of PECs (miscanthus and Short Rotation Coppice) and Short Rotation Forestry (SRF).	Increase land planted with perennial energy crops and short rotation forestry, ensuring above- and below-ground carbon sequestered by fast-growing species through the Biomass Strategy. We will also be further exploring how this will be driven by market demand, what the appropriate sustainable business models might be and whether other support might be needed from government to enable this planting.	0.00812	0.3	1.0	2026
178	Agriculture and LULUCF	Peat Restoration (Blended Finance - 2022-2050).	Restore approximately 280,000 ha of peatland by 2050 (inclusive of the Nature for Climate Fund (NCF) funded restoration). The NCF is providing over £33 million to restore 20,000 hectares of peatlands, with a further bidding round in 2023. Beyond 2025, the main delivery vehicles will be incentives through the new environmental land	0.2	0.8	1.4	2025

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			management (ELM) schemes: Countryside Stewardship will provide a key funding stream for wetter modes of farming; Landscape Recovery will provide long-term funding to support large-scale peatland restoration projects; and the Farming Innovation Programme supports applications for research and development in paludiculture. Private investment will be mobilised by developing the Peatland Code further, including by expanding the Code to cover lowland peat and exploring further carbon pricing opportunities for the sector. Informed by data from the England Peat Map and findings of the Lowland Agricultural Peat Task Force, a Peatland Restoration Roadmap will be developed to set out a detailed trajectory for restoration to 2050.				
179	Agriculture and LULUCF	Increasing responsible management of lowland agricultural peatlands	Promote more responsible agricultural management of peatlands, through raising water tables and wetter modes of farming (e.g. Paludiculture).	0.03600	0.2	0.2	2025
180	Agriculture and LULUCF	End the sale of peat in horticulture.	End the sale of peat in horticultural growing media, in the amateur sector by 2024 and in the professional sector by 2026, with limited exemptions.	0.00000	0.01000	0.04000	2031
181	Agriculture and LULUCF	UK-level estimates of future carbon savings - Agriculture and LULUCF	Modelling for UK-wide consistency for the agriculture and LULUCF sectors	2.1	4.2	6.9	CB4
182	Waste and F-gases	Near elimination of biodegradable municipal waste to landfill - Collection and packaging reforms.	The majority of emissions from the waste sector are attributable to methane produced by biodegradable waste breaking down in landfill. Collection and packaging reforms will support the reduction of biodegradable municipal waste going	0.4	2.0	3.0	2023-2028

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
			to landfill. Collection and Packaging reforms are made up of the consistent collection of household and business recycling, the introduction of packaging Extended Producer Responsibility (pEPR) and a Deposit Return Scheme (DRS) for plastic and metal drinks containers. We have brought forward £295 million of capital funding which will allow local authorities in England to prepare to implement free separate food waste collections for all households from 2025. Consistent collection of recycling is the primary driver reducing biodegradable waste going to landfill. DRS and pEPR will reduce the total amount of waste and therefore create space for more biodegradable waste to be processed in waste processing facilities which are not landfill.				
183	Waste and F-gases	Near elimination of biodegradable municipal waste from landfill - additional policies towards near elimination of this waste to landfill from 2028.	This is an early-stage proposal which will consist of further measures to divert biodegradable municipal waste from landfill from 2028. We will launch a call for evidence to support development of a plan to achieve this shortly.	0.4	0.5	0.7	2023-2028
184	Waste and F-gases	Monitoring emissions from wastewater treatment and subsequent optimisation of existing operations to minimise process and other emissions.	Work with water companies to encourage the widespread deployment of new sensors for the detection of emissions from a full range of sites, treatment stages and environmental conditions to enable optimisation of current processes to reduce greenhouse gas leakage and minimise production.	0.01680	0.1	0.3	2026

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
185	Waste and F-gases	Data improvement for industrial wastewater treatment.	Promote further improvements in modelling and data collection to improve reporting and reduce uncertainty. Government will publish a rapid evidence assessment setting out options to improve estimates of greenhouse gas emissions from industrial wastewater treatment.	0.06720	0.06720	0.06720	2037
186	Waste and F-gases	High proportion of conventionally digested sludge from wastewater treatment is upgraded to Advanced Anaerobic Digestion (AAD).	Work with water companies to upgrade existing treatments which use anaerobic digesters to Advanced Anaerobic Digestion, which emit less greenhouse gas and capture waste energy as heat and natural gas.	0.01344	0.05376	0.08400	2025
187	Waste and F-gases	Alternative treatment processes for wastewater - e.g., anaerobic treatment/Membrane Aerated Biofilm Reactor (MABR)/alternative ammonia removal processes.	Work with the water industry to expand into more sustainable wastewater treatment techniques and encourage the development and adoption of new wastewater treatment processes which will improve the efficiency of wastewater treatment and reduce greenhouse gas production and contribute to the circular economy by allowing resources to be reused.	0.00000	0.02520	0.08400	2030
188	Waste and F-gases	Additional HFC phasedown step(s) to secure 85% cut.	Implementation of additional phasedown step(s) to meet the Kigali Amendment requirement to reduce HFC consumption by 85% by 2036. This will follow the same process laid out for the existing phasedown step(s) in the F-gas regulation. Timescales for this measure assume that legislation is secured.	0.00000	0.00000	0.05627	2035
189	Waste and F-gases	Metered-dose inhalers (MDIs) F-gas Phasedown.	Prescribing incentives introduced by the NHS to reduce the use of HFCs in inhalers and industry commitments to introduce lower GWP propellants in MDIs.	0.02738	0.2	0.5	2025

#	Sector	Policy Name	Policy Description	Avg. Annual CB4 Savings (MtCO2e) pa	Avg. Annual CB5 Savings (MtCO2e) pa	Avg. Annual CB6 Savings (MtCO2e) pa	Timescale from which the policy takes effect
190	Waste and F-gases	UK-level estimates of future carbon savings - waste and F-gases	Modelling for UK-wide consistency for the waste, wastewater and F-gas sectors	0.1	0.5	0.8	CB4
191	Engineered Removals	Business Models to support Greenhouse Gas Removal Technologies	<p>Develop and implement business models to support the overarching policy ambition to deploy at least 5 MtCO2/year of engineered Greenhouse Gas Removals (GGRs) by 2030 and further future development. After 2030 we expect the volume of engineered removals to increase to 23 MtCO2/year by 2035 and 75-81Mt CO2/year by 2050. Our aim is to enable a diverse portfolio of engineered GGRs.</p> <p>The main business models are the GGR Business Model and the Power BECCS (Bio-energy Carbon Capture and Storage) Business Model. The Industrial Carbon Capture (ICC) and Hydrogen Business Models are additional policy instruments that could enable some GGR deployment. The actual split of GGR technology will depend on the scope for business models and commercial negotiations, but likely include Power BECCS, H2 BECCS, Industry BECCS and Direct Air Capture and Storage (DACCS) technologies.</p>	0.054	6.4	23.4	2027

Table 6 – Unquantified proposals and policies

Note - Proposals and policies that we expect will or could deliver further emissions savings, in addition to the savings identified in Table 5, are marked with an asterisk (*). These are proposals and policies for which we cannot currently quantify associated emissions savings, for example in relation to some early-stage proposals, where we are still assessing the available evidence.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/meeting of carbon budgets
1	Cross cutting	Emissions trading- UK ETS Cap: To incentivise cost effective abatement across traded sectors at the pace and scale required to deliver net zero, we have consulted (in partnership with the Devolved Administrations) on a net zero consistent UK ETS cap for 2024-2030. The range of options put forward in the consultation remains compatible with achieving carbon budgets. In due course, the Authority will communicate its decision on the UK ETS cap in its response to the consultation along with an assessment of any impacts on carbon budget delivery.	CB4	The UK Emissions Trading Scheme (ETS) puts a price on the 'carbon externality' that greenhouse gas emissions represent. This is the most cost-efficient way to support the transition to net zero. It is a necessary condition for enabling the market to deliver that transition, and provides a long-term price signal that, when supported by complementary mechanisms and policies, can deliver a stable investment case for decarbonisation. The ETS emissions cap also provides a strong guarantee that the traded sector's emissions will not exceed its decarbonisation pathway.
2*	Cross cutting	Setting out a long-term pathway for emissions trading: We will work within the ETS Authority to publish a long term pathway for the ETS this year. Subject to agreement within the Authority, this pathway will set out our intention to legislate to continue the ETS beyond 2030 until at least 2050. It will remain aligned with our net zero target, so giving businesses the certainty they need to invest in decarbonisation. We will explore	CB4	We will explore expanding the scheme to more sectors of the economy, including high emitting sectors. We consulted last year on expanding the scheme to cover energy from waste/waste incineration and domestic maritime emissions and on incorporating greenhouse gas removals. We will explore the potential role of emissions trading markets in gas/electricity price rebalancing as we consider options for rebalancing policy costs away from electricity and onto fossil energy use when the current high gas prices fall. We will work to develop a harmonised approach for measuring carbon emissions from farms.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
		expanding the scheme to more sectors of the economy, including high emitting sectors.		The ETS emissions cap provides a strong guarantee that the traded sector's emissions will not exceed its decarbonisation pathway. Depending on future decisions regarding the ETS, including future levels of the cap and expansion to other sectors, this could therefore provide additional savings beyond those which are currently quantified.
3*	Innovation	Government portfolio of net zero research and innovation programmes for the Spending Review period 2022-2025 , amounts to approximately £4.2 billion of public investment. This includes £1.5 billion specifically allocated to net zero innovation announced in the Net Zero Strategy (including the £1 billion Net Zero Innovation Portfolio), as well as further research and innovation delivered through other departmental programmes and through UKRI.	Ongoing - policy in effect. Start of emissions savings will depend on the specific innovations, technologies, and sub-technologies being considered, as well as the speed at which they can be scaled up.	This policy provides R&I funding to support the development of new technologies to decarbonise sectors such as power, buildings, industry, transport and agriculture. Continued investment in cutting-edge research, development and demonstration will be integral to achieving the transition. This cross-government portfolio of net zero research and innovation support will help develop technologies critical for decarbonising all relevant sectors of the economy. There is potential for this policy to generate carbon savings beyond those already quantified by increasing the effectiveness of new technologies, reducing costs so that technologies can be deployed at greater scale sooner or from technologies currently at early technology readiness levels which are not yet mature enough to have quantified deployment plans. Additional policies to deploy new technologies at scale will be needed to realise any additional savings from innovation.
4	Innovation	Implementing measures to make it easier for pension schemes to unlock investment in illiquid assets , including innovative companies, green projects, and infrastructure. The government's response to the October 2022 consultation, published on 30 January 2023, outlined the final regulatory changes.	Subject to Parliamentary approval, regulations to come into force by Spring 2023. Start of emissions savings will depend on the specific innovations, technologies, and sub-technologies	This policy aims to open up more financing options for innovative companies, including those focused on net zero.

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			being considered, as well as the speed at which they can be scaled up.	
5	Innovation	Driving innovation in key low-carbon sectors by taking leadership role in Mission Innovation 2.0. Through our leadership of Mission Innovation (MI) and the Secretariat, we have cemented Mission Innovation as the leading forum for international clean energy innovation and global collaboration. The UK co-leads the Green Powered Future Mission and the Clean Hydrogen Mission, as well as the Heating and Cooling Innovation Community. The UK also participates in four other Missions: Net-Zero Industries, Integrated Biorefineries, Carbon Dioxide Removal and Zero-Emission Shipping.	Ongoing - policy in effect. Start of emissions savings will depend on the specific innovations, technologies, and sub-technologies being considered, as well as the speed at which they can be scaled up.	This policy aims to drive enhanced international action and investment in research and innovation for clean energy solutions.
6	Innovation	Missions: As one of the first major investments following the creation of the Department of Science, Innovation and Technology (DSIT), it dedicates £250m over three years to exploiting the UK's global leadership in three of the five technologies that will be the focus of the Department's work: Artificial Intelligence, Quantum Technologies and Engineering Biology. Developed with delivery partners, the new programme delivers against the Innovation Strategy commitments for new "innovation	The programme dedicates £250m over the next three years, but the impacts of the interventions will take place over a longer timeframe.	This policy aims to build on UK strengths and opportunities to catalyse industry, research and public sector actors in developing key transformational technologies which could support the net zero transition.

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		missions” and to support the 7 technology families. The development of these technologies will help tackle major challenges faced by the UK and the world such as climate change and energy security. The missions may include interventions directly supportive of Net Zero activity, or through spill over benefits in the realisation of technology outcomes.		
7	Innovation	<p>The Net Zero Research and Innovation Framework, which set out the key research and innovation challenges for the next 5-10 years and a roadmap to 2050.</p> <p>Alongside the Net Zero Growth Plan, we've published a follow-up Delivery Plan which outlines the government's investment of £4.2 billion towards net zero research and innovation programmes for the current Spending Review 2022-25, aligned to the priorities in the Framework.</p>	Ongoing - policy in effect. Start of emissions savings will depend on the specific innovations, technologies, and sub-technologies being considered, as well as the speed at which they can be scaled up.	This policy aims to set out the government's key priorities for net zero R&DI and clearly articulate government support against those priorities.
8	Innovation	Provision of advice, networking opportunities, skills development and testing facilities, including an online innovation hub from Innovate UK	Ongoing - policy in effect. Start of emissions savings will depend on specific innovations, technologies, and sub-technologies being considered, as well as the speed at which they can be scaled up.	Innovate UK, together with the British Business Bank, is developing an online Innovation Hub for businesses to easily access all funding and support opportunities that are relevant for them with three clicks. This is in response to an action in the Innovation Strategy to provide a dedicated platform for opportunities, making it easier and simpler for innovative businesses to access government backed funding and support. This also includes options specifically for net zero businesses to grow and scale as fast as possible.

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9	Innovation	<p>UK participation in Horizon Europe either as an associated country or a third country, the world's largest collaborative research programme worth around €95 billion over the next decade, will help us reach our net zero goals. With a minimum of 35% of funding earmarked for climate change projects, this collaboration with other world leaders in net zero research will drive further progress. DSIT continues to develop its alternative to Horizon Europe in case it is needed which is designed to significantly increase the scale, pace and impact of our international leadership on Net Zero. This funding will support international research collaboration with the EU and others to drive progress on net zero.</p>	<p>Start of emissions savings will depend on the specific innovations, technologies, and sub-technologies being considered, as well as the speed at which they can be scaled up.</p>	<p>In all circumstances, there will be funding that will support collaboration with EU partners in order to progress net zero research.</p>
10	Innovation	<p>We will continue to invest in R&D through the Advanced Propulsion Centre (APC) competition.</p>	<p>CB4</p>	<p>Support the transition to zero emission vehicles by accelerating technology development. Since 2013, government and industry have jointly committed more than £1.3 billion in the design and development of new vehicle technologies, with 188 zero emission and low carbon projects supported across a range of R&D competitions. These projects are estimated to support over 56,000 jobs and save over 370MtCO₂e.</p>
11	Innovation	<p>We will coordinate transport's investment in R&D, collaborating with key stakeholders through our Transport Research and Innovation Board (TRIB).</p>	<p>2025</p>	<p>TRIB could accelerate R&D to reduce transport emissions, including transport infrastructure.</p>

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12	Investment	<p>Introduce mandatory climate-related financial disclosure requirements across the economy: These requirements were aligned to the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD). To achieve economy-wide reporting, requirements were introduced by the Financial Conduct Authority via listings rules and the Department for Work and Pensions and the Department for Business, Energy and Industrial Strategy via regulation. Regulations came into force through 2021 and 2022, with the final BEIS (now DESNZ) policy coming into effect 6th April 2022.</p>	Requirements in place from 6th April 2022	Significant flows of private finance will be needed to meet our carbon budgets. The right mix and quantum of public and private capital will be a pre-requisite for delivery of most deployment targets, and thus most associated carbon savings. For financial institutions to effectively allocate their capital, they must have access to the right information and data to price and manage risks, identify opportunities and get comfortable with building exposure to new sectors and technologies. The UK's climate-related financial disclosure requirements will help ensure the right capital is available at the right time, reducing the delivery risk of other carbon savings.
13	Investment	<p>Transition planning Currently the Financial Conduct Authority (FCA) requires listed companies, as well as large asset owners and managers to disclose transition plans on a 'comply or explain' basis. The government commits to consulting on the introduction of requirements for the UK's largest companies to disclose their transition plans if they have them. To ensure parity between listed and private companies, as well as to ensure requirements are consistent and comparable across the economy, we expect to consult on the basis that these requirements could align closely with those of the FCA, including the 'comply or explain' basis. The government will also work with the FCA</p>	Forthcoming - subject to consultation	Transition planning is a useful tool for companies to communicate to investors how they will be managing risks and securing opportunities associated with our transition to net zero. They allow investors to more effectively allocate capital.

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		to ensure transition plan requirements are delivered across the financial services sector alongside requirements for listed and private companies.		
14	Investment	<p>UK Green Taxonomy</p> <p>We will deliver a UK Green Taxonomy – a tool to provide investors with definitions of which economic activities should be labelled as green. This will support the quality of standards, labels and disclosures used in the industry for green finance activity. We expect to consult in Autumn 2023. The government proposes that nuclear - as a key technology within our pathways to reach net zero - will be included within the UK's Green Taxonomy, subject to consultation. After the Taxonomy has been finalised, we will initially expect companies to report voluntarily against it for a period of at least two reporting years after which we will explore mandating disclosures. Government does not wish to place undue burdens onto companies whose size or scale makes the disclosure of</p>	Forthcoming - subject to consultation	Significant flows of private finance will be needed to meet our carbon budgets. The right mix and quantum of public and private capital will be a pre-requisite for delivery of most deployment targets, and thus most associated carbon savings. For financial institutions to effectively allocate their capital, they must have access to the right information and data to price and manage risks, identify opportunities and get comfortable with building exposure to new sectors and technologies. As such, the UK's Green Taxonomy will help ensure the right capital is available at the right time, reducing the delivery risk of other carbon savings.

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		<p>taxonomy-related information unreasonable. Therefore, we will develop proposals with proportionality in mind. We are considering whether it is appropriate to pursue a 'Transition Taxonomy', which was a recommendation of the Net Zero Review, or include certain transitional activities within one Taxonomy.</p>		
15*	Investment	<p>Use the new UK Infrastructure Bank to co-invest alongside private sector investors for infrastructure projects. The Bank will support projects in England, Scotland, Wales and Northern Ireland and is available to local and mayoral authorities for key infrastructure projects and will provide advice on developing and financing infrastructure. The Bank will 'crowd-in' in private investment to support economic growth, accelerate our progress to net zero, and help level up the UK. The Bank will invest in public and private projects, as well as providing world-class advisory services. Initially, the government will provide the Bank with £5bn of equity and allow it to borrow a further £7bn on top, with a review point in three years to assess whether that is sufficient funding. In addition to this £12bn of capital it will be able to deploy £10bn of government guarantees. We expect it to use this to crowd in private investment to support more than £40bn of infrastructure</p>	Ongoing - policy in effect	<p>For many of the sectors and technologies we are reliant upon for meeting our carbon budgets, access to the right forms of public funding and co-investment will be critical. This is due to the sectors and technologies in question being too nascent to attract the deepest pools of private capital. Although the capital deployed by the UK Infrastructure Bank cannot be quantified into specific carbon savings, as the capital will be deployed across sectors and across time horizons, the scale and the reach of the capital available means the UKIB's interventions should provide additional carbon savings.</p>

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		investment overall. £4bn of capital is set aside for local authority lending. On the £8bn for private projects, based on evidence from the UK and internationally, we would expect it to crowd in private investment at a ratio of 2.5:1, supporting £20bn of private investment.		
16*	Investment	<p>Adopt a new Net Zero objective and integrate Net Zero into the operations of the British Business Bank (BBB). BBB is a government-owned economic development bank established by the UK government. BBB supports access to finance for smaller businesses to drive sustainable growth and prosperity across the UK, and also to enable the transition to a net zero economy. Between 2014 and end of August 2022, BBB supported £505 million of equity investment in clean technology companies.</p>	Ongoing - policy in effect	For many of the sectors and technologies we are reliant upon for meeting our carbon budgets, access to the right forms of public funding and co-investment will be critical. This is due to the sectors and technologies in question being too nascent to attract the deepest pools of private capital. Although the capital deployed by the British Business Bank cannot be quantified into specific carbon savings, as the capital will be deployed across sectors and across time horizons, the scale and the reach of the capital available means we expect the BBB's interventions to provide additional carbon savings.
17*	Investment	<p>The Clean Growth Fund (CGF): launched in 2020, with an ambition to use its £101 million in venture-stage funding to accelerate the deployment of innovative clean technologies that reduce greenhouse gas emissions, while catalysing the UK clean growth venture capital market and leveraging private sector funding into early stage clean tech start-ups.</p>	Ongoing - policy in effect	For many of the sectors and technologies we are reliant upon for meeting our carbon budgets, access to the right forms of public funding and co-investment will be critical. This is due to the sectors and technologies in question being too nascent to attract the deepest pools of private capital. Although the capital deployed by the Clean Growth Fund cannot be quantified into specific carbon savings, as the capital will be deployed across sectors and across time horizons, the scale and the reach of the capital available means we would expect the CGF's interventions could provide additional carbon savings.

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18	Investment	<p>Green Financing Framework: published in June 2021, sets out six categories of green expenditure that are eligible to be financed under the programme (www.gov.uk/government/publications/uk-government-green-financing). A total of £16.3 billion has been raised by the sale of green gilts and retail green savings bonds for the financial year 2020-21. The Green Financing Programme will continue into the next financial year, with further issuances totalling £10 billion. These proceeds are held in HM Treasury's general account, and the equivalent amount will be allocated to fund environmental and climate-related expenditures as classified in the Framework.</p>	Ongoing - policy in effect	The capital raised through the green gilt helps to fund multiple net zero programmes. As such, the associated carbon savings are already accounted for. The policy does however reduce the delivery risk of the programmes it helps to fund.
19	Investment	<p>Green finance education charter: In 2019, we partnered with the Green Finance Institute and leading UK-based finance professional bodies to launch the first-ever Green Finance Education Charter which commits signatories to integrating green finance and sustainability into their core curricula, new qualifications and the continued professional development of members.</p>	Ongoing - policy in effect	For our green finance policy framework to be effective, and as such for it to reduce overall delivery risk for our carbon budgets, we need the right skills and expertise to be available within our financial and professional services sector. This policy helps deliver that and therefore de-risks the delivery of carbon budgets.
20*	Domestic transport	<p>Promote use of higher biocontent low carbon fuels in compatible heavy-duty vehicles (HDVs) as an interim measure to reduce emissions from internal combustion engine vehicles as the fleets transition to Zero Emission Vehicles</p>	CB4	In 2021 the Zemo Partnership published a report which modelled potential emission savings from deploying higher biocontent transport fuels blends. The modelling suggested the potential to contribute up to 44-47 MtCO ₂ e cumulative emission savings from 2020 to 2030. Higher biocontent fuels would help achieve further GHG savings from existing

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		(ZEV). Fuels could include B20, B30 and B100, where figures represent the fraction of biodiesel blended (i.e., B20 = up to 20% biodiesel blended).		internal combustion engine (ICE) HDVs, as the fleet transitions to zero emission vehicles.
21*	Domestic transport	Identify specific opportunities for transport decarbonisation in rural areas through transport innovation in the upcoming Future of Transport: Rural Strategy.	CB4	The strategy will enable local areas to identify potential solutions for decarbonising rural areas, as well as the risks of not planning for these changes. Alongside decarbonisation, a key aim for the strategy is improving transport for the user.
22*	Domestic Transport	Drive decarbonisation and transport improvements at a local level by making quantifiable carbon reductions a fundamental part of local transport planning and funding.	CB4	Updated Local Transport Plan (LTP) and Quantifiable Carbon Reductions (QCR) guidance will support local transport authorities to drive transport decarbonisation at the local level. This will enable a better understanding of the potential carbon impact of local transport interventions, which will support local authorities to deliver quantifiable carbon reductions and contribute to national decarbonisation.
23	Domestic transport	Allocating further funding to support the electrification of UK vehicles and their supply chains through the Automotive Transformation Fund.	CB4	Support the transition to zero emission vehicles and roll-out of supporting infrastructure.
24	Domestic transport	Build a globally competitive zero emission vehicle supply chain and ensure our automotive sector is at the forefront of the transition to net zero.	CB4	Support the transition to zero emission vehicles and roll-out of supporting infrastructure.
25	Domestic transport	Ensure the UK's charging infrastructure network is reliable, accessible, and meets the demands of all motorists.	CB4	Support the transition to zero emission vehicles and roll-out of supporting infrastructure. The UK now has over 37,000 electric vehicle charging points.

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26	Domestic transport	Launch Local Electric Vehicle Infrastructure (LEVI) Fund to support Local Authorities to deliver charging infrastructure for drivers without off street parking.	CB4	Support the transition to zero emission vehicles and roll-out of supporting infrastructure.
27	Domestic transport	The Rapid Charging Fund will support the upgrade of electricity capacity on the strategic road network, enabling the roll-out of ultra-rapid electric vehicle chargepoints.	CB4	Support the transition to zero emission vehicles and roll-out of supporting infrastructure.
28	Domestic transport	Deliver the first All-Electric Bus Town or City.	CB4	Supports bus, coach, and minibus decarbonisation.
29	Domestic transport	UK Shipping Office for Reducing Emissions (UK SHORE)	CB4	Supports the decarbonisation of domestic maritime across vessels and ports. UK SHORE will deliver £206m of R&D funding to accelerate the development of zero emission technologies. Demonstration projects will directly reduce emissions in both the short and long term.
30	Domestic transport	Publish the Low Carbon Fuels Strategy and further develop policy on potential SAF support for scaling up a UK SAF industry	Ongoing - policy in effect	These policy mechanisms support the effective use and deployment of low carbon fuels. This will deliver emissions savings, particularly in the transition period to zero emission vehicles.
31*	Domestic Transport	Embed transport decarbonisation principles in spatial planning and across transport policy making.	Ongoing - policy in effect	Increased spatial consideration of transport schemes will lead to more potential for walking, wheeling, cycling and public transport uptake, leading to additional carbon savings.

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32*	Domestic Transport	Tees Valley Hydrogen Hub intervention. Investment of up to £20m until March 2025 to establish the UK's first multi-modal hydrogen transport hub in Tees Valley.	CB4	The Tees Valley Hydrogen Transport Hub is delivering hydrogen vehicles and refuelling infrastructure which will lead to a direct reduction in carbon emissions in the Tees Valley in Carbon Budget 4 although the full quantification can only be completed once bids have been properly assessed. DfT will sign grant offer letters with winning projects from the competition, which will ensure continuing activity after March 2025.
33	Domestic Transport	Support the development of commercial-scale Sustainable Aviation Fuels (SAF) plants in the UK through the £165m Advanced Fuels Fund.	CB4 (funding runs to 2025)	Supports delivery of our commitment to SAF deployment, delivering significant emissions savings from aviation.
34*	Green Choices	Launch the Commute Zero Programme. Commute Zero will be a programme that works with leading companies and large employers to research, support and encourage long-term changes to employee travel habits and support the take-up of lower carbon commuting.	CB4	Carbon reductions could be achieved through a combination of encouraging sustainable transport modes, increases in vehicle occupancy, and uptake of zero emission vehicles.
35*	Green Choices	Work with the Civil Aviation Authority to provide consumers with environmental information at the time of searching for and booking flights.	CB4	This policy is aimed at individual consumer choices and therefore it is not possible to quantify its impact on emissions reductions. However, once implemented, additional emissions savings are expected from individuals and businesses making greener choices.
36	Green choices	We are supporting motorists through Plug-In Vehicle Grants, which provide support towards the upfront purchase of new zero emission vans, motorcycles, wheelchair accessible vehicles and trucks, which are eligible.	CB4	Support the transition to zero emission vehicles.

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37	Fuel Supply	<p>Downstream oil & gas: Downstream, UK refineries already underpin major CCUS and hydrogen projects in key industrial clusters. We have also published the draft Downstream Oil Resilience Bill which will give the government the powers it needs to ensure secure fuel supplies are maintained during the transition to net zero.</p>	Energy Bill expected to receive Royal Assent 2023	This policy is not designed to reduce carbon emissions itself, however it will support progress to reduce emissions by enabling CCUS and hydrogen projects which themselves will lead to carbon savings.
38	Fuel Supply	<p>Low Carbon Hydrogen Standard and Certification Scheme: Set up a hydrogen certification scheme by 2025. We envisage the certification scheme will use the methodology set out in the Low Carbon Hydrogen Standard, which sets a maximum threshold for the amount of greenhouse gas emissions allowed in the production process for hydrogen to be considered 'low carbon hydrogen'.</p> <p>Certification scheme - this is a proposal to set up a hydrogen certification scheme by 2025, as committed to in the British Energy Security Strategy. We envisage the certification scheme will use the methodology set out in the Low Carbon Hydrogen Standard, which sets a maximum threshold for the amount of greenhouse gas emissions allowed in the production process for hydrogen to be considered 'low carbon hydrogen'.</p>	CB4 Low Carbon Hydrogen Standard published in April 2022. Hydrogen Certification Scheme to be set up from 2025.	<p>Creating a trusted, transparent certification scheme will help producers and consumers to demonstrate the environmental credentials of the hydrogen they create and use.</p> <p>It will also help to deliver carbon savings in end use sectors by boosting the growth of the low carbon hydrogen market and helping consumers choose low carbon hydrogen. Hydrogen production and certification alone will not generate carbon savings, but we expect it to enable carbon savings in several sectors including industry, power, transport and potentially buildings, by replacing high-carbon fuels used today.</p>

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39	Fuel Supply	Net Zero Hydrogen Fund: The £240m Net Zero Hydrogen Fund (NZHF) aims to support the commercial deployment of new low carbon hydrogen production projects during the 2020s. The NZHF will provide capital grant co-funding to give projects a financial boost for construction to begin. It will also provide development support to stimulate a diverse pipeline of projects.	CB4 Net Zero Hydrogen Fund opened for applications in April 2022. Successful projects from the first funding window announced alongside Net Zero Growth Plan.	<p>This funding will kickstart the production of low carbon hydrogen during the 2020s, which is crucial in displacing fossil fuels and meeting our ambitions for hydrogen production.</p> <p>It will also help to deliver carbon savings in end use sectors by boosting the growth of the low carbon hydrogen market. Hydrogen production alone will not generate carbon savings, but we expect it to enable carbon savings in several sectors including industry, power, transport and potentially buildings, by replacing high-carbon fuels used today.</p>
40	Fuel Supply	Hydrogen Production Business Model: A government subsidy which provides revenue support to hydrogen producers to overcome the operating cost gap between low carbon hydrogen and high carbon counterfactual fuels.	CB4 We aim to award contracts for HAR1 (joint NZHF and HPBM support) in Q4 2023, with first projects operational in 2025 (subject to affordability and value for money).	<p>The intervention will support the deployment of low carbon hydrogen projects that will support government's ambition of reaching up to 10GW of hydrogen production capacity by 2030, with at least half of this from electrolytic hydrogen.</p> <p>It will also help to deliver carbon savings in end use sectors by boosting the growth of the low carbon hydrogen market. Hydrogen production alone will not generate carbon savings, but we expect it to enable carbon savings in several sectors including industry, power, transport and potentially buildings, by replacing high-carbon fuels used today.</p>

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41	Fuel Supply	<p>Industrial Decarbonisation and Hydrogen Revenue Support (IDHRS) scheme and Hydrogen Production Levy: The Hydrogen Production Business Model (HPBM) will initially be taxpayer funded via the Industrial Decarbonisation and Revenue Support (IDHRS) scheme. Through the Energy Bill, we have introduced hydrogen spending powers and provisions for a hydrogen levy which is intended to fund revenue support payments made through the HPBM. Government will provide funding for successful projects from the first electrolytic hydrogen allocation round until the hydrogen levy is in place.</p>	<p>CB4 We aim to award contracts for HAR1 (joint NZHF and HPBM support) in Q4 2023, with first projects operational in 2025 (subject to affordability and value for money).</p>	<p>It is intended to give long term certainty to investors and projects and enable the first commercial scale deployment of low carbon hydrogen production.</p> <p>It will also help to deliver carbon savings in end use sectors by boosting the growth of the low carbon hydrogen market. Hydrogen production alone will not generate carbon savings, but we expect it to enable carbon savings in several sectors including industry, power, transport and potentially buildings, by replacing high-carbon fuels used today.</p>
42	Fuel Supply	<p>Hydrogen Transport and Storage Business Models: This is a proposal to design new business models for hydrogen transport and storage infrastructure by 2025. A consultation closed in November 2022 and a government response is expected in Q2 2023. Legislative measures will be crucial to delivering these new business models.</p>	<p>CB4 We aim to design new business models for hydrogen transport and storage infrastructure by 2025.</p>	<p>The business models will support hydrogen transport and storage infrastructure which is needed to enable our 10GW production capacity ambition and lead to potential carbon savings.</p> <p>It will also help to deliver carbon savings in end use sectors by boosting the growth of the low carbon hydrogen market. Hydrogen production alone will not generate carbon savings, but we expect it to enable carbon savings in several sectors including industry, power, transport and potentially buildings, by replacing high-carbon fuels used today.</p>

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43	Fuel Supply	<p>Reducing Methane Leakage through the Distribution Network (Ofgem) The Gas Distribution Networks have been given a financial incentive in the RIIO-2 price control to reduce leakage levels by means of lowering system pressures and improved gas conditioning levels. Reducing methane leakage means lower greenhouse gas emissions</p>	Ongoing - policy is in effect	The Gas Distribution Networks have been given a financial incentive in the RIIO-2 price control to reduce leakage levels by means of lowering system pressures and improved gas conditioning levels. Reducing methane leakage means lower greenhouse gas emissions
44	Industry	<p>Climate Change Agreements (existing scheme): The Climate Change Agreements scheme exists to ensure that the businesses, for whom energy makes up a larger proportion of their operating costs, are supported to make changes to their processes to increase their energy efficiency. Support through Climate Change Agreements is available to 2,600 eligible businesses in over 50 industrial sectors who meet negotiated energy efficiency or carbon reduction targets. The current scheme began in 2013 and will run until the 31 March 2025.</p>	CB 4	Climate Change agreements support energy efficiency improvements and associated carbon savings for eligible industrial operators

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45	Industry	<p>Climate Change Agreements (from 2025): The government is extending the Climate Change Agreements (CCA) scheme by two years to cover 2025-26 and 2026-27 as announced in the March 2023 Budget. This will allow continued support to energy-intensive businesses across the UK in return for them meeting energy efficiency targets. The terms of the extended scheme are set out in a consultation document published by the Department for Energy Security and Net Zero, published alongside the Budget. The government is considering proposals for a potential future CCA scheme with potential targets from 2025 and the role it could play in supporting energy efficiency aims.</p>	CB 4	Climate Change agreements support energy efficiency improvements and associated carbon savings for eligible industrial operators
46	Industry	<p>IETF Phase 3 Extension: Phase 3 of the Industrial Energy Transformation Fund will launch in 2024, subject to business case approval. The additional £185m budget will support energy intensive industries across the UK to save energy and decarbonise whilst maintaining competitiveness.</p>	CB 4	The Industrial Energy Transformation Fund (IETF) supports industrial sites with high energy use to transition to a low carbon future. The fund targets existing industrial processes, helping industry to cut energy bills by investing in more efficient technologies; and reduce emissions by bringing down the costs and risks associated with investing in deep decarbonisation technologies.

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47*	Industry	<p>International efforts to increase the transparency of embodied emissions and boost demand for low carbon products: The UK championed a number of key initiatives in this area at COP26 and beyond. This includes the Clean Energy Ministerial’s Industrial Deep Decarbonisation Initiative, which the UK co-leads with India. This focuses on aligning approaches to data measurement, standards and procurement, to ensure there is a coordinated approach to market creation across borders. We are also supporting the Net Zero Industry Mission, under Mission Innovation, which aims to foster deeper collaboration on industry decarbonisation.</p>	CB 4	<p>Work to support demand for low carbon products and carbon leakage mitigation starts with an internationally agreed methodology to monitor and report on the embodied emissions of products. This information allows us to enact policies based on data, including private and public procurement, product labelling, product standards and CBAMs. More broadly, mitigating carbon leakage risk is essential to enable domestic businesses to make investments required for decarbonisation and to reach net zero.</p>
48	Industry	<p>Resource efficiency: The approach in driving the transition to a more resource efficient economy is set out for England in the government’s 2018 Resources and Waste Strategy, to be supplemented by a new Waste Prevention Programme, which outlines how we will maximise the value of our resources and minimise waste to increase the circularity of our economy. We will formalise joint working arrangements across government departments to promote collaboration on resource efficiency approaches, ensuring we are using all the policy tools available in working towards shared emissions and environmental targets.</p>	CB 5	<p>Delivering carbon savings through resource efficiency requires collaboration across multiple sectors and departments. This policy will help to unlock the savings attributed to quantified Industrial Resource Efficiency policies by enabling joint working across government.</p>

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
49	Industry	<p>Resource efficiency: Government has supported the Green Construction Board to produce a Routemap to Zero Avoidable Waste, published in July 2021. We will continue to promote the adoption of resource efficient practices across the sector through close collaboration with the Green Construction Board, and wider industry engagement.</p>	CB 5	<p>This policy will help to unlock savings under the quantified Industrial Resource Efficiency package of policies, which includes carbon savings from resource efficiency in construction.</p>
50*	Industry	<p>Demand-side measures/ Carbon Leakage mitigation measures: Published a call for evidence on demand-side policy in Spring 2022, to investigate how we can define low carbon products and the emissions reporting that will be required to support those definitions. It also explored the design of demand-side policy levers, with a view to the potential introduction of voluntary standards and labelling as early as 2025, and regulatory standards being introduced in the late 2020s.</p> <p>In March 2023 the government published a consultation exploring a range of potential policy measures to mitigate carbon leakage risk in the future and ensure UK industry has the optimal policy environment to decarbonise. The eventual policy package could include a Carbon Border Adjustment Mechanism (CBAM), mandatory product standards and other demand-side policies to grow the market for low carbon industrial</p>	CB 5	<p>The aim of demand-side policies is to increase demand for low carbon products, supporting the business case for companies to decarbonise and helping to mitigate carbon leakage. This will enable industry to make the large investments required to decarbonise highly emitting industrial processes. The group of policies described would support significant carbon savings both domestically and internationally.</p>

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		products, as well as emissions reporting that could support the implementation of these policies.		
51	Industry	<p>Resource efficiency: We are supporting inter-disciplinary approaches and strengthening the evidence base on resource efficiency initiatives by collaborating with the UKRI funded National Interdisciplinary Circular Economy Research (NICER) programme. The Department for Energy Security and Net Zero and Defra are also conducting a research project to investigate resource efficiency opportunities across 11 sectors.</p>	CB4	<p>This policy will help to build the evidence base and enable effective decision making to unlock savings associated with the quantified Industrial Resource Efficiency package of policies.</p>

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
52	CCUS Programme	<p>Track 1 of the Cluster Sequencing Programme The cluster sequencing process was established to identify and sequence carbon capture, usage and storage (CCUS) clusters, with Track-1 identifying clusters suitable for deployment in the mid-2020s. Following the announcement of HyNet and East Coast Cluster as Track-1 clusters, we invited applications for capture projects to connect to the clusters. We have announced the Track-1 Project Negotiations List alongside the Net Zero Growth Plan and Energy Security Plan and negotiations with those projects will now commence. We will also set out a process this year for the expanded deployment of projects in the T-1 clusters and their associated stores.</p>	late CB4	<p>The projects included on the Track-1 negotiating list could deliver emissions savings by capturing CO2 emissions and transporting that CO2 to permanent geological storage. The final realised emissions savings enabled by Track 1 of the Cluster Sequencing Programme will be subject to negotiations successfully concluding and projects demonstrating deliverability, affordability and value for money. We have also confirmed we will launch a process to expand the Track-1 clusters.</p>
53	CCUS Programme	<p>Track 2 of the Cluster Sequencing Programme - The cluster sequencing process was established to identify and sequence carbon capture, usage and storage (CCUS) clusters, with Track-2 seeking clusters suitable for deployment by 2030. We have launched further details alongside the Net Zero Growth Plan and Energy Security Plan.</p>	late CB4	<p>We will be launching Track-2 of the CCUS Programme to select two new transport and storage systems, and associated capture projects to deliver government's ambition of deploying CCUS in four clusters by 2030, with Track-2 clusters to be operational by 2030. Any projects delivered through Track-2 will enable emissions savings by capturing CO2 emissions and transporting that CO2 to permanent geological storage.</p>
54	CCUS Programme	<p>CCUS Deployment Post-2030: In response to the Independent Review of Net Zero, we have confirmed we will set out a vision on how the CCUS sector will support our net zero ambitions.</p>	late CB4	<p>Policies to support the delivery of CO2 capture projects and the delivery of further CO2 transport and storage infrastructure are essential for enabling the sectoral capture policies, across power, industry, low-C hydrogen production, waste, and GGRs.</p>

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
55	CCUS Programme	Business Model for Transport and Storage (T&S) of CO₂, including associated economic regulatory framework and legislation to support the development of T&S networks for the deployment of CCUS clusters using a regulated asset base model. The economic licence and supporting network code will be overseen by an economic regulator, (OFGEM).	late CB4	The delivery of the CO ₂ transport and storage infrastructure is essential for enabling the sectoral capture policies, across power, industry, low-C hydrogen production, waste, and GGRs.
56	Engineered Removals	Delivery of £100 million innovation funding (a subset of the £1bn innovation funding set out in the innovation policy section)	CB4	The Innovation funding supports the development of GGR technologies to help them achieve commercialisation. This includes the Direct Air Capture and GGR Innovation Competition. Phase 2 of the competition was announced in July 2022, with over £54m of government funding awarded across 15 of the most promising demonstration projects. This will support our ambition of at least 5MtCO ₂ /yr of engineered removals by 2030 (see quantified list).
57	Engineered Removals	Respond to, and take action following, the call for evidence exploring the role of the UK ETS as a potential long-term market for GGRs.	CB5	The call for evidence explored whether GGRs could be incentivised further if they were integrated into the UK Emissions Trading Scheme. Inclusion of engineered GGRs in the ETS could further support the growth and deployment of GGRs, which will be important in achieving our ambition to deploy at least 5MtCO ₂ /yr of engineered removals by 2030.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
58	Engineered Removals	Explore options for regulatory oversight to provide robust monitoring, reporting and verification (MRV) of GGRs , following the recommendations of the BEIS-led MRV Task & Finish Group involving experts from industry and academia.	CB4	This policy supports carbon budget delivery by designing policy to address critical barriers to the deployment of engineered GGRs through the establishment of reliable MRV standards to underpin business model support and a future negative emissions markets. It plays a critical role in balancing residual emissions from the hardest to decarbonise sectors by setting out accounting and sustainability frameworks to ensure that GGR projects deliver verifiable, permanent and sustainable removals of CO2 from the atmosphere.
59	Buildings	Phasing out of new and replacement gas boilers. The government stated an ambition in the Heat & Buildings Strategy to phase out new and replacement gas boilers by 2035 at the latest.	CB6	The emission savings for the 2035 ambition are embedded within the quantified pathways.
60	Buildings	Additional measures to support the Heat Networks Programme: Heat Network enabling measures aim to ensure that future heat network policies are delivered at the pace and scale needed to meet our net zero targets. The programme ensures that policies are delivered in a programmatic and systematic way and encompasses a range of supporting activity which de-	CB4	Supports savings associated with the Heat Networks Transformation Programme

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		risks delivery. This includes the development of procurement models to leverage private sector investment, technical standards, developing skills and supply chain capacity.		
61	Buildings	Boiler Upgrade Scheme - Extension: The current Boiler Upgrade Scheme can be extended. This would be a part of a number of measures to reach the ambition for 600,000 heat pump installations p.a. by 2028.	CB4	Heat Pump uptake could be accelerated to deliver up to ~15Mt/year of emission savings ² (on average over CB6 period). This depends on wider commercial factors such as the cost of heat pumps (both their upfront costs and running costs). Any future government support would be dependent on future Spending Review outcomes.
62	Buildings	Green Gas Levy: The Green Gas Levy will raise the capital required to fund the Green Gas Support Scheme by placing a levy on all licensed fossil fuel gas suppliers.	CB4	The Green Gas Levy (GGL) applies to licensed fossil fuel gas suppliers in Great Britain from 30 November 2021, and funds the Green Gas Support Scheme (GGSS) (supporting associated savings).
63	Buildings	Energy Technology List - Annual Review: A government list of energy efficient products that meet the robust energy saving criteria. HMG annually reviews the technologies and products that qualify for inclusion. This can be found at https://www.gov.uk/guidance/energy-technology-list	CB4	The list functions as an easy-to-use procurement tool for energy managers, procurement professionals, facilities managers and a wide variety of other professions and organisations. The ETL gives the added reassurance to purchasers of measured and verified energy performance

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64	Buildings	<p>EPC Action Plan: The EPC Action Plan, published in Summer 2020, is intended to improve the accuracy and reliability of EPCs, their usefulness to users, and to improve access to EPC data.</p> <p>The EPC Register was launched in September 2020 and has been redesigned to provide a more user-friendly experience to help people improve the energy performance of their homes.</p>	CB4	Better reflecting the benefits of heat pump installation in buildings assessments could incentivise greater deployment of low carbon technologies. Making EPCs more robust could strengthen retrofitting of homes and the incentives for consumers to value low-carbon homes
65	Buildings	<p>Consumer Information & Advice (former Simple Energy Advice) - Enhancement: A one-stop shop where you can connect your EPC to your home and get bespoke advice on energy efficiency. The next stage will be to connect that advice to the government-funded schemes such as the Home Upgrade Grant and ECO.</p>	CB4	This service is an enabler and will support homeowners make information green choices. Actions to improve their home efficiency will lead to reductions in energy waste.
66	Buildings	<p>Trustmark & PAS 2035: The Each Home Counts review, published in 2016 recommended the development of an overarching standards framework for end to end delivery of retrofit and the establishment of a government endorsed quality mark to ensure consumer protection and redress. HMG sponsors the PAS standards and they, with TrustMark registration, are key requirement for installers working in government funded decarbonisation schemes. We are working with TrustMark to encourage more installers to sign up to</p>	CB4	TrustMark delivers consumer confidence through its expert network of Scheme Providers and their Registered Businesses when undertaking building retrofit work

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		the standards and/or TrustMark as appropriate.		
67	Buildings	<p>Home Retrofit Skills and Capacity Building: Proposal supporting upskilling through the £9.2m Home Decarbonisation Skills Fund, which builds on £6m spent in 2020 and 2021, and will continue to work with the industry to remove barriers to growth, including the uptake of training. We are currently developing plans for a further £15m package of skills support that will launch in 2023</p>	CB4	This proposal supports skills training and capacity building in the home retrofit supply chain, which needs to grow and upskill to meet our fuel poverty and net zero commitments
68*	Buildings	<p>Future Buildings Standard: The Future Buildings Standard will produce extremely efficient non-domestic buildings which use low-carbon heat complemented by high fabric standards. Buildings built to the Future Buildings Standard will be zero carbon ready, meaning that no retrofit work will be necessary to ensure they have zero carbon emissions as the electricity grid continues to decarbonise. These changes will be delivered through amendments to the Building Regulations and publication of a new Approved</p>	CB4	The Future Buildings Standard will produce extremely efficient non-domestic buildings which use low-carbon heat complemented by high fabric standards. Buildings built to the Future Buildings Standard will be zero carbon ready, meaning that no retrofit work will be necessary to ensure they have zero carbon emissions as the electricity grid continues to decarbonise.

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		Document (statutory guidance) subject to consultation.		
69	Buildings	New Buildings: We will consult on whether to end all new gas grid connections, or whether to remove the duty to connect from the Gas Distribution Networks.	CB4	Regulating on new connections to the Gas Grid would act as a backstop to the Future Homes Standards and the Future Buildings Standard to ensure our expected timetable for new builds to be built using low carbon heat from 2025 is met.
70	Buildings	Public Sector: We have initiated the Public Sector Low Carbon Skills Fund which provides complementary funding alongside the Public Sector Decarbonisation Scheme to enable public sector organisations to acquire expert skills in order to unlock decarbonisation projects.	CB4	As an enabler, the Low Carbon Skills Fund provides public sector organisations with the resources to draw together their heat decarbonisation plans. To realise the carbon savings identified in the heat decarbonisation plans, grant recipients are then required to identify funding for and sources of investment in the recommended carbon reduction measures .
71	Buildings	Enablers: We will enhance our gov.uk service to provide homeowners with personal, tailored advice for retrofitting their homes and links to local, accredited, trusted installers. We will launch regionally-led in-person pilots in 2023 and are expanding the telephone helpline will also support users.	Delivery over the next 3 years	This service is an enabler and will support homeowners make information green choices. Actions to improve their home efficiency will lead to reductions in energy waste.

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72*	Buildings	Products standards: Progress consultations on additional proposals to raise products standards between 2022 and 2023 ahead of implementing measures from 2025.	CB4	Current savings are based on proposals to raise minimum energy efficiency standards for a limited group of high priority products. Additional savings would be possible if we set stronger efficiency product standards than is currently planned and/or raised/introduced energy efficiency standards for additional products. Barriers to this would include cost and consumer/business impact of going beyond our current proposals.
73*	Buildings	Additional owner occupier energy efficiency improvement. This is an early-stage proposal to explore how to upgrade homes in the owner-occupied sector to ensure as many homes as possible meet EPC Band C by 2035 where cost-effective, practical and affordable. We are planning to consult by the end of this year on how to improve the energy efficiency of owner-occupied homes.	The consultation will explore implementation trajectories. Policy start and end date to be determined.	Further improvements to the energy performance of owner occupied homes would deliver additional carbon savings towards the carbon budgets.
74	Buildings	The Heat Pump Investment Accelerator Competition (HPIAC). The Accelerator will provide non-refundable grant funding of up to £30m towards building and fitting out new, or re-purposing existing, factories to manufacture heat pumps and/or components. The accelerator expects to support up to £270m in private sector investment, supporting the UK supply chain for heat pumps and components by supporting up to 270,000 heat pumps and components being manufactured in the UK (which is half the 2028 installation target). The accelerator could support up	Delivery over 2023 to 2026.	The competition is intended to support the delivery of CB5 and 6 through improving supply chain security of heat pumps, by increasing domestic manufacturing rather than relying upon importing heat pumps, which as global demand continues to increase, demand is outstripping supply.

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		to 3,000 low carbon jobs, either new or safeguarding those currently working in the UK fossil fuel boiler manufacturing sector.		
75	Buildings	Incentivising low-carbon technologies: The government has committed to setting out a clear approach to gas vs electricity price 'rebalancing' by the end of 2023/24. Rebalancing will generate the clear short-term price signal necessary to shift households and businesses to lower-carbon, more energy efficient technologies such as heat pumps.	CB 4	This policy is intended to support delivery from CB4 onwards by ensuring consumers are not penalised for making green choices through reducing running costs of low carbon heating, relative to fossil fuel alternatives.
76*	Agriculture and LULUCF	Better health through disease reduction in pigs. Endemic production-limiting disease is a major at on efficient livestock production and will have an impact on the carbon footprint of livestock farming. Improving health status would be expected to lead to reductions in emissions intensity. The Animal Health and Welfare Pathway aims to improve farm animal health and welfare across our national herds and flocks, including an in-development Porcine Reproductive	Subject to the results of further development, this proposal could produce carbon savings within the next 3 years.	Improving the health status of pigs would be expected to lead to reductions in the emissions intensity of pork production. This is emerging work and the potential emissions reductions are contingent on research. Defra is currently undertaking research to quantify the emissions savings associated with improved pig health but this has not been completed.

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		and Respiratory Syndrome virus control programme for pigs.		
77*	Agriculture and LULUCF	<p>Development of more sustainable protein sources for human diets. Alternative proteins could offer environmental benefits. However, the sector is diverse and at different stages of readiness and investment, and so further research is needed to overcome technological barriers, increase understand consumer acceptance preferences and accomplish an optimal regulatory alignment that meets the needs of the sector and consumer safety.</p>	<p>Subject to future market development, and the results of further research and policy development, some technologies could produce carbon savings within the next 10 years. Other technologies face technical barriers that mean they will take longer than a decade to deliver savings.</p>	<p>Within a broad and varied market, some alternative proteins may offer environmental benefits through low emissions intensity associated with production. Emissions savings towards the carbon budgets could be delivered via a shift in the agricultural sector in response to market drivers. This is emerging work and the potential emissions reductions are contingent on research and market drivers.</p>
78*	Agriculture and LULUCF	<p>Developing the evidence base on controlled environment agriculture (CEA) systems/vertical agriculture. These systems make it possible to consistently and reliably control and/or manipulate the growing environment. This effectively controls crop nutrition and growth along with potential pathogens (pests and diseases) on the crop, and</p>	<p>This proposal could produce carbon savings within the next 10 - 20 years. In particular, the significant energy requirements of CEA systems will require an integrated</p>	<p>CEA/vertical farming could improve the energy efficiency of production (including reducing transport emissions). This could lead to reductions in the emissions intensity of the arable/horticulture sector. This is emerging work and the potential emissions reductions are contingent on research. These systems are likely to increase GHG emissions until renewable energy sources become more widely available. We continue to undertake research and monitor the evidence base in this area.</p>

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		increases the potential to reduce transport/import emissions and improve yields.	approach to developing renewable energy supply for such projects.	
79*	Agriculture and LULUCF	Methanisation, methane capture and combustion. Additional mitigation intervention whereby the methane generated during storage of liquid manure is collected and burnt, converting it to carbon dioxide, a less potent GHG. There may also be potential to utilise heat or energy produced on combustion within the farm business.	Subject to the results of further research and policy development, this proposal could produce carbon savings within the next 10 – 20 years.	Methane, generated during storage of liquid manure, is collected and burnt. This converts the methane to carbon dioxide, a less potent greenhouse gas, which may deliver carbon savings. There may also be potential to utilise the heat and energy produced. This is emerging work and the potential emissions reductions are contingent on research. Although initial quantification has been attempted, significant uncertainty remains and further work is needed, and further work is needed.
80*	Agriculture and LULUCF	Biorefinery as nutrient recovery. We continue to support research and development in this area such as through the Farming Innovation Programme. The Programme funds industry-led research and development to drive innovation that will enhance the productivity and profitability of England’s farming sectors, whilst enhancing the environment and reducing greenhouse gas emissions. It has already supported a range of projects, including ones which focus on biorefinery as nutrient recovery. For instance, the ‘Bringing H2OPE to Agriculture’ project looks at on-site	Subject to the results of further research and policy development, this proposal could produce carbon savings within the next 5 years.	Producing high-value products, such as livestock feed or fertilisers from waste could support a more circular economy in which emissions are avoided or reduced from feed or fertiliser production. This is emerging work and the potential emissions reductions are contingent on research. Although initial quantification has been attempted, significant uncertainty remains, and further work is needed.

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		transformation of dairy cow slurry into valuable byproducts including fertiliser and growth substrate.		
81*	Agriculture and LULUCF	<p>Using insect protein as animal feed. Feeding insect protein to animals has the potential to reduce overall global emissions from feed production (in comparison to conventional protein production e.g. soya grown overseas) and support a circular economy (e.g. if insects are raised on waste). There is ongoing research to determine the potential of these measures and the sector is at an early stage of development. This measure is unlikely to have significant UK GHG or land use impacts. It could, however, reduce supply chain emissions from feed supply occurring outside the scope of UK carbon budgets.</p>	<p>Subject to the results of further research and policy development, this proposal could produce carbon savings within the next 5 - 10 years. Whilst this may be an important technology to reduce emissions across the livestock supply chain, it may have limited impact on UK emissions. Further work is required to understand the impacts on UK territorial emissions within scope of the Climate Change Act versus wider international</p>	<p>Feeding insect protein to animals may reduce overall global emissions from feed production by displacing soya grown in deforested areas and support a more circular economy.</p> <p>Whilst this may be an important technology to reduce emissions across the livestock supply chain, it may have limited impacts on UK emissions. Further work is required to understand the impacts on UK territorial emissions within scope of the Climate Change Act versus wider international emissions reductions</p> <p>This is emerging work and the potential emissions reductions are contingent on research (including an assessment of any potential impacts on animal and public health).'</p>

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82*	Agriculture and LULUCF	Policy roadmap for the safe use of timber in construction. Increasing the safe use of timber in construction was a commitment in the England Trees Action Plan and the Net Zero Strategy, as it can support storing carbon safely, for example through using timber to build houses. This work will be taken forward in particular through the cross-government and industry timber in construction working group, which will design a policy roadmap identifying key actions for government and industry to safely increase timber use in construction.	Government is planning to publish a Timber in Construction Road Map by the end of 2023 which will lay out the next steps in more detail.	Harvesting timber to be stored in buildings and replanting the woodland creates a ‘conveyor belt of carbon’ from woodlands into storage in buildings. Increased demand for timber means higher timber prices and therefore more investment in woodland creation, which means we’re more likely to meet our tree planting target. Higher timber prices drive increased management of existing woodlands. This makes woodlands more resilient to risks such as wildfire and disease and reduces the risk of reversals which cause emissions. More wood products going into structural use means that the carbon is stored over a longer time horizon than when used for e.g. MDF or pallets. Substitution of carbon-intensive materials such as cement, steel and brick for wood reduces emissions
83*	Agriculture and LULUCF	Increase ambition for planting perennial energy crops and short rotation forestry. This may be achieved either through: increasing land planted, or relaxing expected standards about stocking density or use of exotic species.	Subject to the results of further policy development, this proposal could produce carbon savings in Carbon Budget 6.	Increasing land planted with perennial energy crops and short rotation forestry, would ensure above- and below-ground carbon sequestered by fast-growing species.

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84*	Agriculture and LULUCF	Paradigm shift in water management on lowland peatlands. Major investment in water storage and water level management infrastructure is required to transform the management of water to rewet lowland peatlands. This would enable us to raise water levels safely in a controlled way to an appropriate depth that would lead to lower GHG emissions.	Long term (10+ years)	Rewetting by raising and maintaining higher water levels in peat soil reduces emissions and offers opportunities for continued productive agriculture and growing new crops suited to wetter soils, as well as supporting lowland peat restoration activities. This is because peat restoration is sensitive to water table depth, so managing this is integral to meeting our peatland targets. Further R&D needs to be completed before we can accurately quantify the carbon savings.
85*	Agriculture and LULUCF	Regulatory approaches to activities on lowland peat soils. Following the provision of necessary water management infrastructure, explore how we can go beyond our farming scheme incentives to achieve rewetting of lowland peat soils.	Long term (10+ years)	Peatland is privately owned and incentive schemes are demand led, therefore, rewetting peat soils will be the prerogative of landowners once the water infrastructure is in place. This measure would achieve greater rates of rewetting, reducing the GHG emissions.
86*	Agriculture and LULUCF	Paludiculture. Implementation of a roadmap towards commercially viable paludiculture. This includes building on the work of the Lowland Agricultural Task Force and delivery of the Paludiculture Exploration Fund (2022-2025), which comprises a community engagement project and a competitive grant scheme.	Long term (10+ years)	Raising and maintaining water levels just below the surface of peat soil, as required for paludiculture, reduces emissions and offers opportunities for continued productive agriculture and growing new crops suited to wetter soils.
87*	Agriculture and LULUCF	R&D: Improving peat emissions data. Ongoing Research & Development will improve the quantification of peat emissions data and removals.	Mid term (2-5 years) and ongoing	Improving the available evidence base on our peatlands will enable the baseline estimate of emissions from peat to be revised. Areas of improvement have been identified. It would also support government and industry to implement more effective policy and guidance, supporting reducing our emissions.

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88*	Agriculture and LULUCF	Saltmarsh restoration and creation. Explore the potential for carbon sequestration through the restoration and creation of saltmarsh habitats around the UK.	Subject to the Roadmap recommendations on inclusion in the UKGHGI this proposal could produce carbon savings in Carbon Budget 6.	Saltmarshes may contribute to climate change mitigation. While we are already working to protect and restore these habitats, we are not yet in a position to accurately quantify the extent of that contribution. There are significant data gaps surrounding emissions from coastal wetlands, activity data regarding extraction activities, and habitat extent. This information must be collected before a decision on inclusion in the GHGI can be made.
89*	Agriculture and LULUCF	Seagrass restoration and creation. Explore the potential for carbon sequestration through the restoration and creation of seagrass habitats around the UK.	Subject to the Roadmap recommendations on inclusion in the UKGHGI this proposal could produce carbon savings in the next 12-20 years.	Seagrass may contribute to climate change mitigation. While we are already working to protect and restore these habitats, there are significant uncertainties over the extent of that contribution. Work continues to improve the evidence base.
90*	Agriculture and LULUCF	Explore the potential for carbon dioxide removal through the application of ground silicate rocks to land.	Unknown Provided R&D results are positive and subject to further policy development this proposal could produce carbon savings in the next 10 to 20 years.	This is emerging work and contingent on research, but could provide additional support to meeting carbon budgets through providing a further mechanism for carbon dioxide removal from the atmosphere.
91*	Agriculture and LULUCF	Explore the potential to deploy biochar for carbon sequestration through application to land.	Provided R&D results are positive and subject to further policy development this proposal could produce carbon	This is emerging work and contingent on research, but could support carbon budgets through providing an additional mechanism for carbon dioxide removals from the atmosphere.

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			savings in the next 10-20 years.	
92*	Agriculture and LULUCF	Explore the potential to cultivate microalgae to fix carbon dioxide into biomass.	Provided R&D results are positive and subject to further policy development and inclusion in the UKGHGI this proposal could produce carbon savings in the next 15-20 years.	This is emerging work and is contingent on research, but could support carbon budgets through providing an additional mechanism for carbon dioxide removal.
93*	Agriculture and LULUCF	Explore the potential to cultivate macroalgae (such as seaweed or kelp) to fix carbon dioxide into biomass.	Provided R&D results are positive and subject to further policy development and inclusion in the UKGHGI this proposal could produce carbon savings the next 15-20 years.	This is emerging work and contingent on research, but could support carbon budgets through providing an additional mechanism for carbon dioxide removals from the atmosphere.
94	Agriculture and LULUCF	Agriculture, Forestry and Other Land Use (AFOLU): Nature for Climate Fund. We will boost the existing £640 million Nature for Climate Fund with a further £124 million of new money, ensuring total spend of more than £750 million by 2025	By the end of 2025	NCF supports delivery for both forestry and peat restoration.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
		on peat restoration, woodland creation and management.		
95	Agriculture and LULUCF	<p>Rewetting lowland peat. Rewetting lowland peat necessitates investment in (i) water storage capacity (e.g., reservoirs), and (ii) water level management capabilities (e.g., telemetry, mechanised pumps, Archimedes screws). This infrastructure would facilitate rewetting and address drought and flood risks. Design and cost of interventions will be context-specific, and will require close working with the EA, NE and water management authorities, e.g. around regulatory challenges. We are developing projects to facilitate a better understanding of the costs, barriers, and emissions impact of this work.</p>	Long-term (10+ years)	Rewetting by raising and maintaining higher water levels in peat soil reduces emissions and offers opportunities for continued productive agriculture and growing new crops suited to wetter soil, as well as supporting lowland peat restoration activities. This is because peat restoration is sensitive to water table depth, so managing this is integral to meeting our peatland targets.
96	Waste and F-gases	<p>Product Labelling and company reporting. Explore the use of product labelling to show the durability, repairability and recyclability of products, as well as their environmental footprint, with a view to stimulating demand for better quality items. We have committed to developing a mandatory methodology for the voluntary eco-labelling of food and drink products. This will be for participating companies to consistently follow, providing a common standard where eco-information is voluntarily used</p>	Exploration has started and will be ongoing. We expect activity to increase.	Environmental labelling and eco-labelling can be used to indicate products and services with lower embodied carbon emissions, enabling more informed choices. Company reporting will incentivise companies to improve the environmental performance of their products and drive increased traceability in supply chains.

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		<p>should they choose to include such information on their products. Through the Food Data Transparency Partnership, Defra will also develop defined and consistent methodologies for the food and drink sector to consistently measure and report scope 3 GHG emissions.</p>		
97	Agriculture and LULUCF	<p>Green Jobs and Skills: New professional body for the farming industry. Between 2021 and 2027, Defra will gradually reduce and then stop untargeted Direct Payments. Farmers will instead receive public money for improving the environment, improving animal health and welfare and reducing carbon emissions. To achieve this, farmers will need new skillsets. The government is contributing towards the establishment of a new professional body for the farming industry; The Institute for Agriculture and Horticulture (TIAH). TIAH is aimed at removing the fragmentation that exists within current learning and skills landscape for farming businesses. TIAH will drive improvements in industry capability – which will cover the skillsets required to deliver future Environmental Land Management objectives; including water and air quality, soil husbandry,</p>	TIAH is expected to formally launch in 2023 and its existence will then be ongoing.	This is in an industry initiative that won't directly deliver any additional carbon savings but will enable the delivery of agricultural transition policies that aim to deliver net zero.

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		<p>woodland restoration and management, agroforestry and biodiversity. Alongside TIAH's work, we are also looking at the new skills and knowledge advisers may need to support farmers and land managers towards these goals. Action is already being taken by the sector. For example, the Chartered Institute for Ecology and Environmental Management (CIEEM) has developed a competency framework and BASIS has recently launched an environmental adviser training module and register.</p>		
98	Agriculture and LULUCF	<p>Green Jobs and Skills: Forestry Training Fund. To meet afforestation targets, the Forestry Training Fund launched in February 2023 to provide practical training courses for new entrants and upskilling the existing workforce. With Forestry England, we are increasing the number of available apprenticeships including the launch of the Level 6 Professional Forester.</p>	Started and ongoing.	The initiatives won't directly deliver any additional carbon savings but will enable the delivery of forestry policies that aim to deliver net zero, such as the afforestation targets

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99	Agriculture and LULUCF	Agriculture: Consider the role of emissions targets to drive decarbonisation. Assess the role and efficacy of introducing agriculture specific emissions targets, such as targets split between individual greenhouse gases to drive decarbonisation across the agriculture and land use sectors.	We will consider whether an emissions target for agriculture would help to drive down emissions and will keep this under review.	Emissions targets, or targets split between individual greenhouse gases, could help us reduce emissions in the agricultural sector. This is an early-stage proposal and next steps have not yet been determined. The potential emissions reductions are contingent on further research.
100	Agriculture and LULUCF	Develop the evidence on agroecological farming systems and the potential of regenerative systems. We are seeing farmers undertake such practices and are monitoring efficacy across farming. Defra's evidence programme encompasses R&D on the productivity, sustainability and wider trade-offs of agroecological farming systems including extensive livestock systems, which will inform future development. Many of the pathway measures delivered through the Environmental Land Management schemes align with agroecological practices, for example introducing cover crop.	R&D is ongoing as part of a long-term programme of work developing evidence to feed into policy on an ongoing basis.	This is an early-stage proposal, with next steps yet to be determined. Agroecological farming systems may promote farming practices that reduce Greenhouse Gas (GHG) emissions, such as reducing Nitrogen application and introducing clover into pasture, supporting delivery of the pathway. Although regenerative measures are considered within the pathway and delivered through the Environmental Land Management Schemes, there is scope for additional emissions reductions from farming practices promoted under agroecological farming systems once they are better understood.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
101	Agriculture and LULUCF	<p>Increase the use of robust Monitoring, Reporting and Verification of GHG emissions (MRV). We will explore policies to increase the use of MRV across farm businesses as a mechanism to support improved understanding and behaviour change for decarbonisation. This will build on the recent UK ETS consultation call for evidence chapter which explored the use and application of MRV for the agriculture sector and ongoing research projects to examine opportunities to better harmonise and improve the robustness of emission reporting across farm, food, and drink businesses. We will develop a harmonised approach for measuring carbon emissions from farms and by 2024 will set out how farmers will be supported to understand their emission sources through carbon audits and take further actions to decarbonise their businesses.</p>	<p>We will develop a harmonised approach for measuring carbon emissions from farms by 2024.</p>	<p>This is an enabling policy that could support the delivery of carbon savings within existing net zero agriculture measures by improving sector level understanding of the source and scale of emissions on farms, and empowering farmers to deliver existing measures in order to decarbonise. This is an early-stage proposal and next steps have not yet been determined. The potential emissions reductions are contingent on further research.</p>
102	Agriculture and LULUCF	<p>Further incentives to encourage nutrient use efficiency. Continue to monitor the effectiveness of current nutrient efficiency measures and market forces and consider development of policy levers to further enhance or strengthen delivery if needed e.g., through regulation.</p>	<p>We will continue to keep this enabler under review and implement if required.</p>	<p>This is an enabling policy which could support emissions reductions by encouraging a more efficient use of nutrients. This is an early-stage proposal and next steps have not yet been determined. The potential emissions reductions are contingent on further research.</p>

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
103	Agriculture and LULUCF; Waste and F-gases	<p>Explore the role of carbon pricing strategies and trading markets as a mechanism to drive decarbonisation.</p> <p>We will continue to review potential carbon pricing strategies for the agriculture and land use and waste sectors, including the potential role for voluntary or compliance carbon markets to support cost effective decarbonisation in these sectors.</p>	<p>We will continue to review whether carbon pricing will support cost effective decarbonisation. In 2022, we consulted on proposals to expand and improve the UK ETS. Details of next steps will be published in the government Response.</p>	<p>This is an enabling policy that could support emissions reductions by encouraging uptake of net zero measures and practices. This is an early-stage proposal and next steps have not yet been determined. The potential emissions reductions are contingent on further research.</p>

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/meeting of carbon budgets
104*	Waste and F-gases	<p>R&D to refine emissions estimates and explore further methane gas capture from landfill. Landfill gas is collected and is used to generate electricity, oxidised through flaring or natural processes. Whilst current practices capture some landfill gas, there is room for improvement. Previous research has indicated that most methane is lost at operational sites through uncapped waste and around infrastructure, such as gas wells. Industry practise could reduce this leakage. There are also other smaller opportunities for improvements at closed but permitted sites.</p>	<p>This is ongoing early stage research at present, but with appropriate resource and progress we could expect activity in this area to increase and therefore, provided R&D results support the further development of this trajectory of travel, timeframes for carbon savings could be possible in the range 5-15 years.</p>	<p>This is emerging work and contingent on research but could support the more accurate measurement of landfill gas and enable exploration of opportunities to improve methane gas capture from landfill.</p>
105	Waste and F-gases	<p>Waste water: Research and Investment. Water company research and investment into reducing process emissions from wastewater treatment plants, e.g. anaerobic treatment, membrane activated biofilm reactors, alternative ammonia removal processes and nature-based solutions.</p>	<p>This is ongoing but we expect activity to increase.</p>	<p>Improving the available evidence base on process emissions will enable government and industry to implement more effective policy and guidance, supporting reducing our emissions.</p>

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
106*	Waste and F-gases	Raising ambition through additional actions identified by the review of F-gas legislation. We are undertaking a review of F-gas policy in 2023 and will identify action to deliver additional emissions savings which we will then take forward as appropriate.	Providing legislation is secured, savings could begin in 5-10 years	Subject to passing suitable primary legislation, measures identified through the review of F-gas policy are likely to allow us to deliver greater emissions savings, although the extent of these savings cannot at present be determined.
107	Green Jobs and Skills	We have established an Expert Committee on Critical Minerals to advise government and have published an updated list of these minerals to guide investment decisions. A Critical Minerals Intelligence Centre has also been launched that will provide robust, dynamic analysis on stocks and flows to guide our decision-making. The government has published a Critical Minerals Strategy on 22nd July 2022 setting out our approach to securing the technology-critical minerals and metals.	Ongoing - policy in effect	Increasing the resilience of global critical mineral supply chains supports the manufacturing of clean technologies globally. Securing the supplies of critical minerals can support the UK to play its part in manufacturing the technologies required for the NZ transition.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
108	Green Jobs and Skills	<p>The Green Jobs Delivery Group (GJDG) - A cross-cutting delivery group to include representatives from industry, the skills sector and other key stakeholders to oversee the development and delivery of the government's plans for green jobs and skills. This group will drive action across the green skills agenda. We will set out further details on the membership and mandate of the cross-cutting delivery group later this year.</p> <p>We will continue to encourage industry to ensure there is equal opportunity for all to work in the green economy, building on our existing support for industry initiatives. Through the cross-cutting delivery group we will explore what actions can be taken across industry to improve diversity in the green economy, including improving data collection and transparency.</p>	Policy in effect	The Green Jobs Delivery Group is supporting the delivery of policies which help to deliver net zero and reduces risks to delivering our Carbon Budgets. For example, it can accelerate or extend the savings achieved across its work plan.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/meeting of carbon budgets
109	Green Jobs and Skills	The Skills for Life campaigns - raises awareness of education, training and skills options, including those that can lead to green careers, inspiring young people (14-19) and adults (primary audience is adults aged 25 to 44 years old, C2DE, secondary audience is working age population, C2DE, in England) to work in the green economy. This campaign supports Net Zero by promoting green careers in its images, content and case studies - along with other shortage and priority sectors.	2023	<p>The user journey for people exploring, applying for and taking up skills offers is not linear and delivered across multiple partners.</p> <p>Government cannot track a customer journey from initial interaction with the campaign to take up of skills offers, completion and employment. We are exploring whether it is possible to track awareness and consideration of qualifications and jobs that would contribute to net zero although this is challenging due to the complexity of the 'green' sector and the numbers of jobs that could contribute to net zero.</p> <p>We are exploring how to gather demand-led data which could be fed into an assessment of campaign effectiveness. While this data will shed light on what is happening on the ground, we would not be able to directly link the campaign to any of this data due to the incomplete customer journey and the fact it is impossible to demonstrate the additionality of comms vs other interventions.</p>
110	Green Jobs and Skills	Delivery of Sustainability Strategy by Department of Education (published April 2022)	2021 (to 2030)	<p>The strategy will support meeting of carbon budgets in the following ways:</p> <ol style="list-style-type: none"> 1. Enabling cross government net zero policy by providing a pipeline of learners prepared for the net zero economy. 2. Stimulating behaviour change in learners and thus the local communities via initiatives such as the Climate Action Award, Climate Action Plans and the National Education Nature Park. 3. Reducing the carbon emissions from the operations of the education system (36% of total public sector emissions).

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
111	Green Jobs and Skills	Introduce a national education nature park and award scheme	Moving into national rollout from September 2023	Enables children and young people to develop skills needed for their future studies and careers and to ensure that they factor in climate change and sustainability in their work going forward. By studying for the Climate Action Award, children and young people will be developing new skills needed in Net Zero industries.
112	Green Jobs and Skills	<p>Employer-led Local Skills Improvement Plans (LSIPs) are bringing together employers and providers (e.g., further education colleges) to identify skills priorities. The Skills and Post-16 Education Act 2022 places LSIPs on a statutory footing and the Secretary of State for Education may only approve a LSIP if satisfied that the skills, capabilities, or expertise required in relation to jobs that contribute to or support Net Zero targets, adaptation to climate change and other environmental goals, have been considered in the development of the plans. We have now designated employer representative bodies (ERBs) to lead on the development of LSIPs in all 38 areas of England.</p> <p>The Strategic Development Fund (SDF) provides capital and programme funding to enable FE providers in an area to support changes in local facilities and provision so as to better meet the needs of employers, as set out in LSIPs.</p>	<p>LSIP Trailblazers took place during 2021-22 FY. National rollout of LSIP programme began September 2022 with LSIPs to be signed off by SoS by summer 2023. Once rolled out, policies are ongoing, with plans drawn up over 3 year cycles.</p>	<p>This will support more people to retrain, develop skills, grow an interest in and gain qualifications in jobs that are directly or indirectly linked to the NZ transition (e.g. Wind Turbine Maintenance, Electrical Install, bio science). This will help limit supply chain constraints thereby de-risking delivery of existing policies.</p>

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
113	Green Jobs and Skills	Careers - we will continue to build an integrated careers information, advice and guidance offer to raise awareness of different career pathways in low-carbon sectors	Ongoing - policy in effect	Awareness raising of opportunities in green jobs and skills through the provision of careers information, advice and guidance, supports uptake of new and growing opportunities within the green skills economy. By creating a more informed workforce in this area, it will help limit supply chain constraints thereby de-risking delivery of existing policies.
114	Green Jobs and Skills	Further education teaching - we have worked with employers to develop a refreshed occupational standard for Further Education teaching (included in the Level 5 Learning and Skills Teacher Apprenticeship), which came into effect in September 2021. This occupational standard will form the basis of future FE teaching qualifications, confirming that from 2024 all FE trainee teachers, not just apprentices, will embed and promote these issues across their teaching, in all subject areas. This means that future learners in FE will receive training relevant to new developing growth sectors. This will support future skills supply by ensuring that all new FE teachers have a good level of skill and understanding in relation to teaching on sustainability.	The revised Learning and Skills Teacher Apprenticeship Standard was made available for delivery in September 2021.	Future skills supply will be supported as all new FE teachers will have a good level of understanding of sustainability in relation to their technical and vocational subject. Future FE teachers will be able to ensure that sustainable knowledge and practices underpin their teaching and they will be well positioned to support emerging skills.

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115	Green Jobs and Skills	Green Apprenticeships and Technical Education Advisory Panel - The Institute for Apprenticeships and Technical Education (IfATE) has convened a Green Apprenticeships and Technical Education Advisory Panel (GATE-AP) to work with employers to align occupational standards to net zero and wider sustainability objectives.	CB4 Target to have greened all in scope occupational standards by March 2024. Processes are being updated to ensure environment and climate change Knowledge, Skills and Behaviourss are considered as business as usual.	By updating occupational standards to include environment and climate change , people undertaking apprenticeships and other technical education qualifications will be able to apply their learning to work in sectors which contribute to delivery of the carbon budget and help to make sectors which are les directly linked to carbon budgets function more sustainably.
116	Green Jobs and Skills	Continue to roll out T levels which support green careers - there are three Construction, and three Engineering, Manufacturing T Levels now in live delivery and Agriculture is in development for September 2023.	There are three Construction, and three Engineering and Manufacturing T Levels now in live delivery and Agriculture is in development for September 2023.	This policy will contribute to meeting the latest environmental and climate change skills needs. Increasing quantity and quality of green careers will help limit supply chain constraints thereby de-risking delivery of existing policies.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
117	Green Jobs and Skills	<p>Higher Technical Qualifications (HTQs) - started rollout from September 2022. These are existing and new level 4/5 qualifications approved and quality marked by IfATE as aligning to the skills demanded in the workplace by employers, including for green occupations. Digital HTQs are available for teaching this academic year with additional occupational routes coming on stream up to 2025.</p>	<p>Cycle 2 of rollout which also covers Construction and Health & Science (in addition to Digital) will begin teaching in September 2023.</p> <p>Qualifications approved in cycle 3 will be available for teaching from September 2024, covering an additional 4 occupational routes (7 in total).</p> <p>Qualifications approved in cycle 4, will be available for teaching from September 2025, covering an additional 6 occupational routes (13 in total).</p>	<p>HTQs are important to meeting carbon budgets as roll-out up to 2025/26 will continue to broadly align with government priorities, supporting the development of level 4/5 skills aligned with the transition to net zero.</p>

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
118	Green Jobs and Skills	<p>Institutes of Technology - the Network of 21 Institutes of Technology (IoTs) across England are working alongside industry leading employers to deliver higher level technical provision in key STEM subjects such as manufacturing and engineering, construction and digital.</p> <p>The extent to which each IoT delivers green skills provision as part of their curriculum is determined by the IoT itself and is dependent on the skills needs of employers in the area they serve.</p>	Wave 1 IoTs are already in delivery, 7/9 wave 2 lots are expected to commence delivery from September 2023.	The provision delivered by IoTs links to employment in green jobs across a wide range of sectors, supporting the transition to net zero and the wider net zero system.
119	Green Jobs and Skills	<p>Skills Bootcamps - providing free, flexible courses of up to 16 weeks for people to retrain and upskill at Levels 2-5 in skills supporting the green economy, including building retrofit, solar and wind, heat pump installation, forestry and arboriculture, electric vehicle maintenance and repair, and charge point installation.</p>	The policy is ongoing, however its next iteration is under review.	Skills Bootcamps support Carbon Budget delivery through the provision of training, and employment, in green sectors and roles that support the reduction of emissions and the transition to net zero. Examples include upskilling workers into job roles that support greater energy efficiency in domestic and commercial buildings, and to work with green technologies that contribute to the lowering of carbon emissions.
120	Green Jobs and Skills	<p>Through the NSF we are funding an Emerging Skills Project in electrification and battery technology, which commenced in June 2021. We are exploring options to develop the Emerging Skills Programme further, to stimulate the provision and demand for cutting-edge skills in key technologies and sectors such as green construction.</p>	The policy is in current delivery (started April 2021) and has funding cover within the current SR period .	The policy supports green jobs across a wide range of sectors, supporting the transition to net zero and the wider net zero system.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
121	Green Jobs and Skills	<p>Free Courses for Jobs - provides adults without an existing full level 3 the opportunity to gain one by studying one of over 400 high value qualifications.</p> <p>In addition, adults who meet the definition of being unemployed or the low wage criteria can also access these qualifications for free, regardless of their prior qualification level.</p> <p>Some qualifications are available to study online or part-time and those eligible may be able to get support to pay for childcare, travel, and other costs.</p> <p>Free Courses for Jobs includes various qualifications supportive of the green economy; a list was published in 2021 alongside the Green Jobs Taskforce report.</p>	<p>The policy is in current delivery (started 2021) and has funding cover within the current SR period.</p>	<p>Whilst FCFJs is not primarily a net zero focused delivery policy, it will support more people to retrain, develop skills and gain qualifications in jobs that are directly or indirectly linked to the NZ transition (e.g. Wind Turbine Maintenance, Electrical Installation).</p>
122	Green Jobs and Skills	<p>STEM subjects - we are encouraging more students into STEM subjects throughout primary and secondary education. To do this, we are funding several initiatives to support STEM teaching and uptake, such as support for teaching about climate change as part of the curriculum. We are encouraging a diverse range of students to take up STEM subjects through programmes such as Tomorrow's Engineers Code which showcase the diversity of roles and people that make up the STEM sector.</p>	<p>This policy covers a range of short, medium, and long-term interventions which feed into the National Science and Technology Council's aim of making the UK a 'science superpower' by 2030.</p>	<p>Increasing the uptake of STEM skills throughout primary and secondary education will impact the supply of skills relevant to green jobs in STEM sectors, indirectly supporting the transition to net zero and the wider net zero system.</p>

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123	Green Jobs and Skills	The Department for Work & Pensions are considering how government can work more closely with sectors in the future to support them in the green transition , and we are identifying where we can adapt and enhance our support for people at risk of redundancy to support a transition to green jobs.	2018-2022	Improvements in DWP's ability to support people into green jobs will help to ensure recruitment demand in green industries is met as these sectors grow to help deliver the net zero transition. Providing support for workers in at-risk jobs to move into new roles will also mitigate against the risks of Carbon Budget delivery, as high emission sectors decline.
124	Green Jobs and Skills	Defra are in the process of commissioning an R&D project to assess the size of the wider restoration sector and the level of growth it needs to undergo in order to meet our restoration targets. This will include looking at green skills routes into the sector.	CB4	The jobs and skills initiatives will enable the delivery of peat restoration targets as part of the delivery of net zero.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
125*	Local NZ	Local Net Zero Hubs Programme: supports all areas of England to reach net zero by promoting best practice and supporting local authorities to develop net zero projects and attract commercial investment.	Ongoing - policy in effect	<p>Local authorities play an essential role in driving and accelerating action to tackle climate change with significant influence in energy, housing, and transport. Local authorities are directly responsible for only 2-5% of local emissions through their own estates and operations, but they have potential to influence up to around 80% of all UK emissions. Local authorities can also attract private sector net zero investment that wouldn't otherwise be obtained, supporting local supply chains with new and upskilled local jobs. Local authorities can therefore play a key role in supporting the delivery of our national net zero targets across a number of sectors.</p> <p>The Local Net Zero Hubs Programme supports all areas of England with their capacity and capability to reach net zero by supporting local authorities to develop net zero projects and attract commercial investment to accelerate net zero delivery.</p>
126	International	The UK has responded to the Glasgow Climate Pact by revisiting its 2030 Nationally Determined Contribution (NDC) and strengthening it with information on delivery of our target to reduce all greenhouse gas emissions by at least 68% by 2030 on 1990 levels.	Present - 2030	<p>The 2030 NDC is more ambitious than Carbon Budget 5 and in response to the Glasgow Climate Pact, was strengthened by making the following updates:</p> <ul style="list-style-type: none"> • clarified how the target aligns with the Paris Agreement temperature goal; • explained more fully how the UK will deliver the NDC by 2030; • updated on the progress made in expanding the territorial scope of the NDC to include the UK's Crown Dependencies and Overseas Territories; and • included more detail on the UK's approach to levelling up, gender, green skills, public engagement, Just Transition and how the UK is supporting other countries with delivery of their NDCs.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
127	International	Build on our G7 and COP26 Presidencies and COP campaigns to strengthen collaboration in key sectors . Utilise bilateral relationships (and extensive climate attaché network) and multilateral fora to develop strategic partnerships on climate action , including through G20.	This is an ongoing commitment with much of the work driven by regular multilateral and bilateral governance (eg annual COPs underpinned by interessionals throughout the year). The effects of this work will last indefinitely but we are focusing particularly on driving action this decade to keep 1.5 degrees within reach	Promoting greater international ambition and coordination across climate and energy policy supports our Net Zero Strategy by addressing multiple issues and making decarbonisation faster and cheaper for all, offering opportunities for growth and trade. As the impacts of UK action on international decarbonisation are not possible to quantify, it is not possible to quantify the potential impact o UK emissions.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
128	International	<p>Published a refreshed Export Strategy to outline how we are advocating for extended export support to green energy initiatives and more green innovation in the export market for the period 2021-2024.</p> <p>In the first year of the strategic period, UK Export Finance (UKEF) has: introduced variants of its existing products which offer low carbon exporters access to increased lending capacity, with extended repayment terms; estimated its financed emissions across its full portfolio and set ambitious 2030 decarbonisation targets for the oil and gas, and power sectors, which will guide UKEF on its pathway to net zero by 2050; and continued to demonstrate international leadership on climate change, such as by supporting peers in their implementation of the COP26 statement to end public support for the fossil fuel energy sector overseas (the government's fossil fuel policy), and by becoming the first export credit agency in the world to offer Climate Resilient Debt Clauses (CRDCs) in its direct sovereign lending.</p>	2021 - 2024	UKEF support can unlock finance for green exports and investment. This supports HMG's net zero by 2050 ambitions, by growing industrial capacity in new technologies, and the Export Strategy ambition to increase exports to £1 trillion by 2030.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
129	International	<p>Champion UK priorities for integrated international climate and nature action over the coming decade in a cross-governmental strategic framework (anticipated Q1 2023).</p>	Present - 2030	<p>The Strategic Framework for International Climate and Nature Action sets out how government will continue to drive forward ambitious international climate and nature action to 2030. It brings together existing government international policy on climate and nature for the first time. As this is an internationally focused framework the main impacts are expected to be on emissions in other countries. However, supporting faster international action - for instance in innovation, research and deployment - could potentially have positive spill overs globally and in the UK e.g. helping to reduce costs and speed up low carbon deployment.</p>
130	International	<p>The UK will seek to increase and facilitate trade in green goods and services through our trade policy, our pipeline of free trade agreements (FTAs) and our seat at the World Trade Organization (WTO).</p> <p>We will seek to reaffirm our commitment to the Paris Agreement in all UK trade agreements, and will ensure that they preserve our regulatory autonomy to pursue our climate targets.</p> <p>We will use our multilateral fora to galvanise international partners to adopt climate-ambitious trade policy, and to promote global trade rules that are aligned to net zero and the Paris Agreement.</p>	Ongoing - policy in effect	<p>Trade can help support the growth of the global market for priority sectors identified in the Net Zero Strategy - zero emission vehicles and renewables are particularly trade-exposed sectors with global supply chains.</p> <p>While the UK enjoys regulatory sovereignty, agreeing clarificatory text under FTAs offers some additional protections for measures required to meet net zero targets, in the event of a trade dispute.</p> <p>Trade is an important enabler across priority net zero sectors. Changing trade patterns will also play an important role in reducing deforestation and preventing carbon leakage.</p>

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131	International	<p>Publication of the UK International Climate Finance Strategy brings together the collective ambitions for ICF of DESNZ, FCDO and DEFRA, and reaffirms our international commitment to double ICF spend on 2019 levels, to £11.6bn in the period from 2021/22 to 2025/26. The strategy also shows how we are delivering on the ICF sub-targets which we have announced publicly, on nature adaptation, and innovation.</p>	<p>FY21/22-25/26 - Strategy speaks to how it contributes to 2030 UK objectives and 2030 UN Sustainable Development Goals</p>	<p>This investment will support low and lower-middle income countries to increase their level of ambition in their NDCs, including by investing more in the protection and restoration of critical ecosystems, such as forests, peatland and marine habitats which are major carbon sinks. A more ambitious global effort could reduce the cost of certain low carbon technologies more quickly, catalysing and de-risking our own transition.</p>
132	International	<p>Following the adoption of the Just Transition Declaration at COP26, the UK will focus on the implementation of this framework to support developing countries and emerging economies to accelerate climate ambition and enable a global green recovery</p>	<p>International declaration that has taken effect indefinitely. We intend to include information on Just Transition efforts, where relevant, in our national Biennial Transparency Reports in the context of reporting on our policies and measures to achieve our Nationally Determined Contributions</p>	<p>Just Energy transitions supports the greening of the economy in a way that is fair and inclusive.</p>

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/meeting of carbon budgets
133	International	Commitment to monitoring the impacts of our climate and clean energy policies to assess the need for targeted support for disproportionately impacted groups. This will include working to advance gender equality and diversity in the clean energy sector, for example through our commitments under the 'Equal by 30' Campaign to work towards equal pay, equal leadership and equal opportunities for women in the clean energy sector by 2030.	By 2030	A gender diverse energy sector is vital for driving energy transition
134	International	We will support increased climate finance flows to developing and emerging markets to finance the transition to net zero , this includes delivering on our commitment to provide £11.6 billion International Climate Finance. As part of this HMG is increasing investment to £3 billion in nature-based climate solutions which offer co-benefits for biodiversity and so support delivery of the Global Biodiversity Framework.	Total ICF spend of 11.6Bn is committed to the period 2021/22-2025/26. DESNZ has approx 20% share of this budget.	This investment will support low and lower-middle income countries to increase their level of ambition in their NDCs, including by investing more in the protection and restoration of critical ecosystems, such as forests, peatland and marine habitats which are major carbon sinks. A more ambitious global effort could reduce the cost of certain low carbon technologies more quickly, catalysing and de-risking our own transition.
135*	International	Following ICAO's adoption of Net Zero by 2050 as its long-term aspirational goal, continue to use UK influence through the forum to push for the strengthening of existing measures such as CORSIA and agree further measures, such as a global target for sustainable aviation fuels.	2022	This policy would support reductions to UK aviation emissions (both domestic and international), e.g., through increased use of SAF. It cannot be quantified at present as it is not known what can be achieved through international agreements, but further developments are likely.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
136	Embedding	Lay legislation on 'Improving Consumer Experience of Public Charging'	CB4	Support the transition to zero emission vehicles and roll-out of supporting infrastructure.
137	Embedding	We have established the Domestic Economic Affairs (Energy, Climate and Net Zero) Cabinet Committee - DEA(ECNZ) which places net zero and climate more broadly at the heart of government decision-making.	CB4	The Cabinet Committee sits at the apex of internal government governance structures. As such it indirectly supports all quantified policies - it does this through progress monitoring, direction setting and decision-making.
138	Embedding	Revision to HMT Green Book Guidance , including on transformational change and upcoming changes to carbon valuation in policy appraisal.	CB4	This policy supports the delivery of Carbon Budgets by giving policy officials the tools to fully consider and appraise climate change and emissions when creating policy. Proper appraisal and evaluation of emissions will ensure ministers have high quality advice on costs and benefits when deciding between policy options, increasing the quality of decision making and - ultimately - policy outcomes for the UK.
139	Embedding	HMT set requirements at Spending Review 2021 for major bids to be assessed according to their climate and environmental impact , and has published data on the environmental impacts of SR21. HMT continues to improve this methodology and to work with departments to build capacity and capability. HMT also now requires all measures at budgets to have climate impact assessments.	CB4	This policy supports the delivery of Carbon Budgets by ensuring that the climate impacts of spending bids are considered as part of the Spending Review process led by HMT. This ensures that net zero is embedded into fiscal decision-making processes.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/meeting of carbon budgets
140	Embedding	Greening Government Commitments to reduce emissions from the estates and operations of central government and their partner organisations	The current set of GGC targets cover the period 2021-25, and so fall into CB3 (2018-2022) and CB4 (2023-2027)	This policy provides government departments and their partner organisations with targets to reduce their emissions. This will help these organisations to decarbonise and ultimately helping to meet Carbon Budgets.
141	Embedding	National Procurement Policy Statement sets out clear principles that contracting authorities should be following organisationally, with net zero being one of the key considerations.	CB4	This policy encourages the consideration of net zero in public procurement, aiming to ensure that contracting authorities factor in net zero as they undertake procurement activities. This policy ensures net zero is embedded into the wider public procurement ecosystem, working in tandem with other policies to leverage public procurement spending in support of net zero.
142	Embedding	Carbon Exclusion Measure Procurement Policy Note requires suppliers bidding for major government contracts (>£5m) to commit to net zero and publish a 'Carbon Reduction Plan'.	CB4	This policy ensures that suppliers bidding for major government contracts commit to net zero and publish a carbon reduction strategy. This helps to ensure that the government is procuring with suppliers committed to net zero.
143	Embedding	Environmental principles policy statement: impact on net zero. The Environment Act 2021 makes sure that environmental considerations are at the heart of government policy making, by creating a legal duty on Ministers of the Crown to have due regard to the environmental principles policy statement when making policy. The five internationally recognised principles are: integration, prevention, rectification at source, polluter pays, and the precautionary principle. The policy statement is designed to set out how the principles should be interpreted and proportionately applied. The final	The final Environmental Principles Policy Statement was laid before Parliament on 31 January 2023. The duty to give due regard to the statement will commence on 01 Nov 2023.	The Environment Act 2021 places a legal duty on Ministers of the Crown to have 'due regard' to the environmental principles policy statement (EPPS) when making policy. We published the final EPPS in Jan 2023. The EPPS explains how Ministers of the Crown should interpret and proportionately apply the five environmental principles when making new or revised policy. Its publication will help to further embed net zero (as it is a core component of the overall EPPS framework) into government policymaking. It will come into force on 1 November 2023. This will help support the transition to net zero and delivery of Carbon Budgets.

No.	Sector	Policy name and description	Timescale from which the policy takes effect	How the policy supports delivery/ meeting of carbon budgets
		environmental principles policy statement was published on 31 Jan 2023. Following an implementation period, the duty will come into force on 01 Nov 2023.		

Appendix C: Deployment assumptions underpinning quantified savings

The table below shows real-world deployment assumptions for each sector, based on the emissions profile of proposals and policies in this report. Ranges indicate where values differ between the electrification and hydrogen pathways set out for the heat and buildings sector. In some cases, these assumptions represent early-stage assessments based on maximum technical potential. Given ongoing uncertainties, the policy mix that will meet carbon budgets, and related deployment assumptions, are subject to change; these are illustrative and should not be interpreted as government targets.

Table 7

Sector	Deployment assumption	Unit	2021	2025	2030	2035
Power	Electricity generation	TWh	307	315	370	460* - 495
	Low carbon GB generation as a percentage of total projected generation required in 2035	%	34% - 38%*	37% - 41%*	67% - 71%*	99%
Industry	Low carbon fuels ^a consumption as a percentage of final energy consumption in industry**	%	40%	40%	50%	60%
	Resource and energy efficiency savings	MtCO ₂ e	See policy savings tables for resource and energy efficiency policy savings			
	Industry demand for Industrial CCUS (including BECCS)	MtCO ₂ e	0	0	6	10

Fuel Supply	Low carbon hydrogen production	TWh	0	10***	55 - 65	80 - 140*
	Electrical power demand from offshore oil and gas installations as a percentage of their total power demand	%	0%	0%	25%	29%
Heat & Buildings	Cumulative heat pumps installed domestically	Million installations	0.3	0.9	3.6* - 3.8	7.1* - 11.5
	Cumulative homes converted to 100% hydrogen for heat	Million homes	0	0	0 - 0.2*	0 - 4.0*
	Yearly homes treated by new domestic energy efficiency measures	Million homes	0.2	1.5	0.4	0
	Low carbon fuels ^a consumption as a percentage of total fuel consumption in commercial buildings (excluding heat networks)	%	59%	61%	65%	73%
	Yearly heat supplied via heat networks	TWh	15	17	27	35
	Yearly biomethane injected into the grid	TWh	4	7	12	13
Agriculture & LULUCF	Yearly area of peatland under restoration in England	Ha	1,600	14,000	14,000	7,000
	Yearly area of afforestation in the UK	Ha	13,300	7,500	8,900	10,300
	Yearly additional area of perennial energy crop and short rotation forestry planted	Ha	0	0	9,600****	15,000****

	Farmers engaging with low carbon farming practices as a percentage of total farmers	%	56%	70%	75%	85%
Waste & F-gases	Level of HFC consumption relative to a 2015 baseline level (percentage of bulk gas use only in 2015 use)	%	45%	31%	21%	21%
Removals	BECCS and DACCS	MtCO ₂ e	0	0	5.6	22.9
	ZEVs as a percentage of total car fleet	%	0.9%	7%	25%	52%
	ZEVs as a percentage of total van fleet	%	0.5%	3%	16%	43%
	ZEVs as a percentage of total HGV fleet	%	0.1%	0.4%	9%	37%
	ZEVs as a percentage of total bus and coach fleet	%	0.8%	14%	35%	61%
Domestic transport	Low carbon fuels ^a used in road transport as a percentage of total fuel use (in litres)	%	6%	9%	10%	11%
	Proportion of short journeys (less than 5 miles) in towns and cities that are walked or cycled	%	45%	46%	50%	55%
	SAF use in domestic aviation as a percentage of total fuel use (in tonnes)	%	0%	4%	10%	15%
	Low carbon fuels ^a use in domestic shipping as a percentage of total fuel use (in TWh)	%	0%	0%	1%	42%
IAS	SAF use in international aviation as a percentage of total fuel use (in tonnes)	%	0%	4%	10%	15%

	Low carbon fuels use ^a in international shipping as a percentage of total fuel use (in TWh)	%	0%	0%	1%	28%
Overall	GDP carbon intensity	tCO ₂ e/ GDP£m2021	184	140	93	64
	GDP energy intensity	MWh/ GDP£m2021	670	630	540 - 550*	450 - 470*

*Reflects demand in the high hydrogen pathway.

**This metric has been changed from "Low carbon fuel switching" published in the Net Zero Strategy due to methodological issues. Figures for low carbon fuel switching, including BECCS, are 122TWh for 2021, 115TWh for 2025, 120TWh for 2030, and 160TWh for 2035.

***Figure reflects hydrogen production in the mid-2020s (rather than 2025 specifically).

****Energy crop and short rotation forestry area figures are indicative and may vary, for example, based on precise mix of crop varieties.

^a The table includes several deployment assumptions covering relevant low carbon fuels in different sectors. The low-carbon fuels included are the following: electricity, biofuels, solid biomass, hydrogen, ammonia and methanol. All of these deployment assumptions include electricity and hydrogen both in the numerator and denominator, with the exception of low-carbon fuels used in road transport (from which electricity and hydrogen are completely excluded).

The metric 'Single track kilometres electrified per year' has been removed while we develop an appropriate metric to reflect the policy on rail electrification.

Appendix D: Sectoral summaries of delivery confidence

1. Delivery confidence for all proposals and policies- but particularly those delivering in later carbon budget periods- will be impacted by technological developments, societal changes and future spending arrangements. Below we set out further detail for each sector.

Power

Introduction

2. Delivering deep decarbonisation of power is key both to delivering sector carbon savings and unlocking the path to net zero across transport, industry, and heating buildings. Meeting growing demand while achieving the goal of decarbonising the power system by 2035 subject to security of supply needs substantial expansion of renewable low carbon generation. This will require appropriate planning arrangements, expansion of electricity networks and grid connections, strong supply chains, deploying sufficient flexible capacity capable of replicating the role of unabated gas on the electricity system and the delivery of new nuclear capacity. We must catalyse private investment in low carbon infrastructure to deliver the level, pace and scale of ambitions. Given the scale and pace at which the power sector will need to deliver generating infrastructure, to meet demand, and the risks to delivery and deployment, power must retain optionality on which generating technologies deploy to deliver lower cost solutions.
3. The Energy White Paper, Net Zero Strategy, British Energy Security Strategy, and the Energy Security Plan set out our strategy for decarbonising the power sector, including how we are developing and delivering a portfolio approach to mitigate the delivery risk of any individual project or technology.

Risks and mitigation

4. An efficient planning system for nationally significant infrastructure is essential for the deployment of large scale low carbon electricity generation technologies like offshore wind, nuclear power and power-CCUS at the pace and scale we need to meet Carbon Budget 6. The government is undertaking several actions to review planning and consents, such as the Action Plan for reform published in February, making the system faster, fairer and more effective, as well as changes to Permitted Development Rights to simplify obtaining planning consent

for solar installations. The government has also issued a Call for Evidence on Land Rights and Consenting for electricity networks. The government is also updating the National Policy Statements to ensure that we have a planning policy framework to support infrastructure required for net zero and has set up taskforces to support the development and deployment of infrastructure.

5. The electricity network will need to be expanded so that the new generating capacity can connect to the grid. The electricity network will need to be able to manage an additional capacity required on the electricity system for Carbon Budget 6. We are developing proposals and policies to meet this onshore and offshore, including delivering the Electricity Networks Strategic Framework, focused on how government and Ofgem would enable the transformation of the network at the scale and pace required; and delivering the Centralised Strategic Network Plan with Ofgem and National Grid ESO; and Holistic Network Design with National Grid ESO.
6. Nuclear capacity is a key technology in the decarbonisation of the power sector, and faces legislative, planning, policy and financing challenges. We manage this by planning on taking one project to FID this Parliament and two projects in the next Parliament, legislating in 2022 for the Regulated Asset Base, setting up Great British Nuclear and taking forward Sizewell C. Further action to mitigate risk includes work on a nuclear siting consultation as a first step towards a new National Policy Statement for nuclear; implementing the Action Plan published last month for reforming the planning process for all nationally significant infrastructure; and exploring the potential for streamlining the planning process further. In addition, the government has launched Great British Nuclear (GBN) which will be funded to lead delivery of our programme of new nuclear projects. The first priority for GBN is to launch a competitive process to select the best small modular reactors (SMR) technologies. We will also be exploring the research and development of advanced modular reactors (AMRs) and fusion.
7. Currently the UK relies heavily on unabated gas to provide flexibility in the electricity system. Reducing emissions in the power sector will also depend on bringing forward flexible technologies that are capable of replicating the role of unabated gas in the electricity system. These include technologies such as power CCUS, hydrogen to power, and energy storage. To boost confidence and funding clarity for CCUS we are taking forward Track 1 negotiations including one power CCUS project; setting out plans for Track 2 and expansion of Track 1 clusters; and setting out a longer-term vision to give investors, industry and regulators clarity on our 2030s approach. For hydrogen to power we intend to consult on the need and potential design options for market intervention and we will develop appropriate policy to enable investment in large scale long duration storage by 2024. We are also taking forward actions set out in the Smart Systems and Flexibility Plan. This includes legislating for enabling powers in the Energy Security Bill and consulting on proposals for a Secure and Smart Electricity System.
8. Power BECCS is a technology that can deliver both low carbon generation to support the decarbonisation of the power sector, as well as negative emissions. To support the deployment of power BECCS the government is developing

Power BECCS business models to incentivise negative emissions and power generation.

Industry

Introduction

9. Industry is a major source of CO₂ emissions. Industrial sectors in 2021 produced 18% (76 Mt CO₂e) of UK emissions, with just over half of these emissions concentrated in specific 'clusters' – geographical areas with large concentrations of industry. We set out a plan to decarbonise industry in the Industrial Decarbonisation Strategy (2021) and in the Net Zero Strategy.

Risks and mitigation

10. Our ambitions are stretching to achieve. To de-risk delivery we are looking at what could be delivered with further government action on resource and energy efficiency, fuel switching and CCUS. We increased our ambition in the Net Zero Strategy to capture and store industrial emissions (from 3 MtCO₂ per year to 6 MtCO₂ by 2030, and to 9 MtCO₂ per year by 2035); are now committed to delivering more fuel switching to low carbon alternatives, with our initial ambition to replace around 20 TWh of fossil fuels per year by 2030 – potentially increasing to 50 TWh per year by 2035; and decarbonising the iron and steel sector in the 2020s and early 2030s. We are also developing proposals for industry through the Energy Efficiency Taskforce, as part of the 15% reduction in energy use target, which will increase delivery confidence for industrial energy efficiency and resource efficiency.
11. A lot of our efforts are focused on major industrial clusters, which account for just over half of total industry emissions, and less on support for remaining emissions in more 'dispersed' industrial sites. To address this, we have launched the Local Industrial Decarbonisation Plan (LIDP) to allow industries outside industrial clusters to develop strategic plans to decarbonise. Plans will be reviewed to ensure they continue to present value for money and are delivering on the carbon savings expected.
12. Many industries continue to highlight carbon leakage as a risk preventing investment. We are addressing this by ensuring there is a clear plan for carbon leakage mitigation that gives industry confidence to invest ahead of upcoming changes to the ETS cap.
13. The delivery of the industrial decarbonisation pathway is heavily reliant on new and emerging technologies, alongside significant investment. This is a long-term package that will be adapted as our understanding of the technical and economic potential for industrial decarbonisation continues to develop.

Fuel supply

Hydrogen production

14. We have an ambition to have up to 10GW low carbon hydrogen production capacity by 2030, subject to affordability and value for money, with at least half of that coming from electrolysis. Growing the sector from an extremely low starting point naturally entails challenges in either high hydrogen or high electrification scenarios.
15. Hydrogen production alone will not generate emissions savings, but we expect it to enable emissions savings in several sectors including industry, power, transport and potentially buildings by replacing high-carbon fuels used today.
16. Policies intended to meet this stretching 2030 ambition and contribute towards CB6 carry delivery risks, some of which are inevitable given pace and scale of deployment. We have higher certainty in the delivery and funding of some policies in the near term, having launched the Net Zero Hydrogen Fund, Hydrogen Production Business Model, and the Low Carbon Hydrogen Standard. Confidence should grow as government and industry action provides clarity on long term funding, production, and legislating for Transport and Storage business models by 2025.
17. Up to 50% of the 2030 hydrogen production ambition depends on Carbon Capture Use and Storage (CCUS), which carries delivery risks which could materially affect the successful delivery of the associated carbon savings for 2030. Progress on Track 1, Track 1 Expansion and Track 2 plans provide significant mitigation for these risks.

Oil & Gas

18. The oil and gas sector continues to make good progress in decarbonising in line with North Sea Transition Deal (NSTD) for upstream; and steady progress on the midstream gas approach. NSTD projects are primarily focused on offshore infrastructure electrification, and cessation of routine flaring and venting, which require industry action and new approaches so entail delivery risks.
19. Factors driving the delivery risks include the high cost of infrastructure change, regulatory complexity, bottlenecks in network capacity and scheduling and a challenging investment climate. These could affect the speed at which we electrify and decarbonise. We do not assume that all platforms will electrify.
20. Government continues to work with the industry and regulators to help mitigate these risks, including by responding to questions regarding the regulatory environment and encouraging investment in infrastructure.
21. The oil and gas sector's expertise and supply chain is key to supporting technologies that will help us enable carbon budgets to be met, including

offshore wind, CO2 storage, and hydrogen; while ensuring UK energy security as we transition to net zero by 2050.

Heat and Buildings

Introduction

22. The Buildings sector accounted for around 17% of UK GHG emissions in 2019 and therefore has a significant contribution to make to enable carbon budgets to be met. Action is needed on finance, regulation and driving consumer behaviour change.

Risks and Mitigation

Future Government decisions

23. Delivery is dependent on government taking decisions in relation to future Carbon Budget periods to provide additional funding and to regulate for changes. This will be subject to technological developments, societal changes, stakeholder views, future spending arrangements and broader policy developments.

Consumer choices

24. Over a third of the policies require consumers to make choices to achieve the carbon savings. There are risks that these choices may not occur due to several factors including concerns around costs and lack of clear information for the consumer to make informed choices, which could mean there would be no widespread adoption of policy measures. In July 2022 government launched a home retrofit tool on GOV.UK, 'Find ways to save energy in your home', and a phonenumber service that will help provide consumers in England with tailored and impartial information about how to improve the energy performance of their homes. Consumer awareness of the benefits of heat pumps and the Boiler Upgrade Scheme is also being raised through a targeted marketing campaign.

Supply chains

25. There is also a risk that retrofit and low carbon heat supply chains do not grow or upskill sufficiently to enable meeting our energy efficiency and clean heat deployment targets. This sector can face capacity issues as the majority of businesses are small to medium enterprises that may require support to upskill or retrain staff. Also, within the labour market there are challenges for attracting workers with the right skillset for insulation measures, which we are addressing with skills funding across heat decarbonisation and buildings retrofit. The £15m Home Decarbonisation Skills Fund commits to future support for training for people who want to work in the energy efficiency sector and has already funded 18 projects. We have also recently announced the £5m Heat Training Grant for heat pump and heat network skills.

Capital costs

26. Product supply may not meet demand at an affordable price which makes the achievement of targets more expensive. This is driven by current costs of technologies or measures and the potential to reduce these, as well as by inflation, transport costs and competing demand from other markets. Product supplies are not directly within government control but are influenced by demand generated by government schemes or policies. For clean heat measures, we are growing the heat pump market and supply chain through the Boiler Upgrade Scheme, Clean Heat Market Mechanism, Heat Pump Investment Accelerator and through off-gas grid regulations. An insulation products strategy is in development with key industry partners to enable management of peaks in demand and overall costs.

Running costs

27. Distortions between electricity and gas prices may continue to disincentivise technologies such as heat pumps. We are committed to support low carbon technology development and deployment.
28. The external risks outlined above present delivery challenges to the buildings sectors carbon savings targets, however we are confident that the agreed and funded schemes will deliver on their targets with appropriate mitigation. Schemes without allocated funding or in an early stage of development carry inherently higher risk and are subject to future decision-making.

Natural Resources, Waste and F-Gases

Introduction

29. The Natural Resources, Waste and F-Gases (NRWF) sectors accounted for 18% of UK GHG emissions in 2021, meaning that delivery of emissions savings in this sector are important to enabling cross-economy carbon budgets to be met. Action on these areas can also support economic growth, a circular economy, and co-benefits for nature.
30. Many of the delivery risks faced in these sectors are due to a need for further research and innovation, dependencies on other stakeholders to deliver, supply chain and sector capacity issues and the need to manage potential trade-offs with other priorities, such as food production. There is increased risk to delivery as many of our proposals and policies are in early stages of development. It is crucial we maintain flexibility to adapt our pathway to ensure we maximise co-benefits with priority outcomes. Some of the most significant delivery risks are detailed below. There are links and interdependencies between the different thematic risks.

Risks and Mitigations

31. Given the UK's land use profile and that these sectors are largely devolved, a significant proportion of UK-wide emissions reductions savings will be delivered

by Devolved Administrations (DAs). Many of the risks to delivery of emissions savings will likely be common across all four nations. Proposals and policies for these sectors may be subject to risks such as the need to manage competing demands on land, dependencies on stakeholders, the appropriate infrastructure being in place, evidence gaps and dependencies on early stage technologies. Close working will continue with DAs on net zero policy and analysis to support UK-wide delivery, addressing common challenges and sharing best practice to mitigate delivery risks, recognising devolved competence.

Data, Evidence and Research and Development

32. Various measures that form part of the package of proposals and policies are dependent on R&D and improved data. We are addressing this risk through Defra's commitment to spend £75 million on net zero R&D for the NRWF sectors during the current spending review period and through a £270 million Farming Innovation Programme.

The role of external stakeholders

33. Many actions are dependent on external stakeholders. For example, waste policies are dependent upon successful implementation of the reforms by businesses and local authorities and response from households. We are working closely with businesses and local authorities to support detailed waste policy development. Also, in order to restore and manage lowland peatlands, government and industry need to work together to ensure the correct water infrastructure exists to facilitate water management.
34. Many of the agriculture and wider land use measures will be delivered through our environmental land management schemes, which are voluntary schemes and depend on sufficient uptake. For agriculture and land use measures, information on the schemes' funding was published in January 2023, including the announcement of six new Sustainable Farming Incentive standards. The second round of Landscape Recovery focuses on net zero, protected sites and habitat creation, including creating and enhancing woodland and peatland. government will monitor uptake and implementation and will consider adjustments.

Land Use

35. There is a risk that competing priorities for land affects delivery of emissions savings. We have a finite amount of land and this needs to support the delivery of net zero as well as other objectives, like improving biodiversity and water quality, as well as maintaining food production. To address this, government will publish a Land Use Framework later this year, setting out how our land can play an important role in delivering multifunctional landscapes.

Early-stage proposals and policies

36. Many proposals and policies, such as policy relating to domestic biomass planting and some aspects of waste decarbonisation, are at early stages of development. Key risks to delivery of the biomass pathway include establishment of the business model for sustainable biomass cultivation, linked with demand from end use sectors including bioenergy with carbon capture and

storage, and confidence in uptake of new models for land use. R&D and policy work is ongoing to increase delivery confidence. For delivery of waste emissions savings, we committed in the Environmental Improvement Plan to launch a call for evidence to support detailed policy development to achieve the near elimination of biodegradable municipal waste to landfill from 2028.

Transport

Introduction

37. In 2020 transport remained the biggest emitting sector of the UK economy, responsible for 24% of UK greenhouse gas emissions. Reducing transport emissions is therefore a clear priority to successfully enable carbon budgets to be met. To tackle transport emissions, in July 2021 DfT published the Transport Decarbonisation Plan. This included 78 ambitious commitments – covering all types of transport – to decarbonise the sector and set it on the path to net zero. We have made good progress on delivering these commitments and must continue on this trajectory. Despite the intrinsic uncertainties of long-term sectoral emissions projections, we still have a reasonable to high level of confidence that the proposed policy package will deliver in line with what is needed to enable carbon budgets to be met.

Risks and Mitigations

38. Road transport accounts for around 90% of domestic transport emissions, with nearly three quarters coming from cars and vans. A principal risk is that the regulation and incentives we are putting in place are insufficient to drive the transition to zero emission vehicles at the speed required to enable carbon budgets to be met. However, we have confidence in the established mechanisms for transitioning the car and van fleet to zero emission alternatives, and there are already signs for optimism. Evidence shows that deployment of electric cars and vans in the time since publication of the 2021 Net Zero Strategy has outstripped expectations – both domestically and in international comparators – indicating that these technologies are attractive to consumers. The adoption of battery electric cars has also increased dramatically with nearly 17% of new cars sold in 2022 battery electric. Regulation will come into force, most notably the ZEV mandate from 2024 and phase out dates for the sale of all types of new non-zero emission vehicle by 2040 at the latest. There will also be continued investment in enabling measures – such as the Local EV Infrastructure Fund and Project Rapid – to support the rollout of essential charging infrastructure. We will continue to monitor progress in this space, and should our confidence change, we will consider additional measures to support the transition to ZEVs.

39. Another risk is that we see considerable, unanticipated growth in transport demand, going beyond our high-end projections. DfT analysis is based on the latest available demand projections for road transport and aviation. However, the

impacts of recent lower GDP projections on road traffic projections and the impact of COVID on aviation demand are not yet fully factored in, and these factors may mean growth in demand is lower than current projections. This helps to mitigate this risk, and critically, should future demand be lower than current projections, emissions will be lower than previously forecast.

40. Risks to delivery are highest where there is a reliance on nascent or immature technologies and associated markets, such as zero emission vehicle or flight technologies or utilisation of lower carbon fuels. To mitigate this risk, stakeholder groups and R&D funding are being used to explore how technologies can be expedited and supported through development. For example, zero emission maritime technologies are supported through the UK SHORE R&D programme whilst the Zero Emission Road Freight Demonstrator is supporting development of zero emission freight technologies. The Zero Emission Flight Delivery Group (part of the Jet Zero Council) has been established to explore the UK's capabilities to deliver zero emission technologies.
41. As committed to in the Transport Decarbonisation Plan, DfT will review progress against our pathway at least every five years and consider as necessary additional options to support delivery of UK carbon budget targets.

Greenhouse Gas Removals

Introduction

42. Engineered greenhouse gas removals (GGRs) are essential for meeting net zero and enabling our carbon budgets to be met.⁷ We have an ambition to deploy at least 5MtCO₂/yr of engineered removals by 2030, with analysis suggesting 30 Mtpa removals are required by 2037 at the end of carbon budget 6. However, this is a nascent sector, with inherent associated uncertainty as new technologies and markets for engineered removals are in their infancy. We are addressing this uncertainty and enabling the sector through progress on policy and through innovation funding. This includes developments on GGR and power BECCS business models, monitoring, reporting and verification (MRV), access to carbon capture and storage (CCS) infrastructure and exploring integration with the UK ETS.

Risks and mitigation

43. Key to managing the uncertainty and risk in this emerging sector is supporting development across a range of GGR technologies and projects. Through this portfolio approach and our ongoing policy development, we are confident that we are developing a world-leading approach to GGRs and enabling the delivery of engineered removals for carbon budgets.

⁷ Nature-based solutions, such as afforestation, are included in the Agriculture and LULUCF subsector

44. New technology scale-up carries inherent delivery risk and government's innovation funding is crucial for de-risking this. The GGR sector needs to pull through a portfolio of First of a Kind (FOAK) technologies to commercialisation. We are addressing this through the DAC and Greenhouse Gas Removals Innovation Programme; last year we announced over £54m of government funding across 15 GGR pilot projects.
45. Business models are essential to address the risk of financial barriers to deployment and provide investors with certainty in early GGR projects. In 2022, we consulted on both a GGR and FOAK power BECCS business model. For the GGR consultation we intend to respond later this year and we will publish the power BECCS consultation response imminently. In December 2022, the Industrial Carbon Capture (ICC) Business Model and Waste ICC Business Model also updated policy positions on how potential GGR credits will be incorporated into the business models.
46. A well-functioning negative emissions market will be essential to reduce investment risk for the private sector. We are exploring options for different market options to support deployment. We will work within the UK ETS Authority to consider options for integrating GGRs in the UK ETS subject to the outcomes of last year's UK ETS consultation, a robust monitoring, reporting and verification (MRV) regime being in place, and the management of wider impacts - including market stability and the permanence of the emissions stored by the GGRs. Further detail will be provided in the Government Response to the UK ETS consultation. We recognise the integrity offered by the UK ETS could unlock investment at scale in the UK's greenhouse gas removal sector by providing an integrated market where businesses can make economically efficient choices on how to decarbonise or remove their emissions.
47. Robust MRV will be critical to reduce market risks and increase public certainty through ensuring the credibility of GGRs. We are developing our MRV policy through consultation and we intend to review the existing landscape, to determine which of these standards, if any, might form the basis of 'MRV eligibility criteria' for business model support in the near-term. For biomass GGRs, the Biomass Strategy is due to be published in 2023 and will outline recommendations for enhancing the UK's existing biomass sustainability criteria.
48. Access to CCS clusters is critical to achieve the volumes of removal needed. For technologies that rely on long-term geological storage, such as direct air capture with carbon capture and storage (DACCS) and bioenergy with carbon capture and storage (BECCS) access to CCS is important for large scale removals. Subject to criteria under development, the government is minded to enable engineered GGRs to apply to Track-1 expansion and Track-2 of the CCUS cluster sequencing process. We have also published a project submission process for power BECCS projects to enable project selection and announced the outcome of this assessment.

Appendix E: Wider Factors

Table 8 Summary of wider factors

Factor	Consideration in Net Zero Growth Plan chapters and accompanying publications	Conclusion
Scientific Knowledge	Analysis is based on the latest science available. We have adjusted emissions to account for the latest climate science.	The scientific case for strong action on climate change remains definitive.
Technology	See Innovation chapter and Technical Annex	The latest evidence on relevant climate technologies has been used for all emissions analysis.
Economic	See Net Zero Workforce and Green Finance and Investment chapters. Sectoral impacts considered in each, relevant chapter.	There are many economic and competitiveness impacts of the transition, with some potential significant economic benefits, particularly when compared against inaction on climate change. However, the economic impacts and interactions of reaching net zero are complex. We make no overall conclusion.
Fiscal	See Embedding Net Zero in Government chapter.	The full fiscal impact of these proposals and policies is not yet known and will depend on varied policy decisions and economic outcomes. DESNZ and other departmental spending was set at the 2021 Spending Review. We will continue to consider the impacts on the public finances of future climate policy.
Sustainable Development	See Sector chapters	There are both positive and negative natural capital impacts associated with these proposals and policies but the overall contribution to sustainable development is likely positive.
Energy Policy	See Power chapter and separate Energy Security Plan. Analysis in this report has accounted for latest policy developments, including the response to recent	Delivering our carbon budgets has the potential to reduce demand for gas, coal, oil and transport fuels which could improve security of supply by diversifying away from primarily imported fossil fuels. Other measures will mean increases in electrification and the simultaneous deep decarbonisation of electricity supply, which carries security of supply risks.

energy price spike and recent announcements to ensure long-term security of supply.

<p>Social</p>	<p>See “Empowering the Public and Business to Make Green Choices” and Buildings chapters. See also Energy Security Plan.</p>	<p>Price and bill impacts will depend on electricity market developments and consumption patterns. Government has mitigated some of the worst impacts of recent energy price increases, saving typical households £1,500 factoring in the extension of the Energy Price Guarantee to June. Policies that improve energy efficiency of homes will reduce bills and benefit fuel poor households.</p>
<p>International Aviation and Shipping</p>	<p>See Technical Annex and Transport chapters.</p> <p>IAS emissions are factored into analysis and into presentation of the sixth carbon budget.</p>	<p>IAS emissions will be included in the sixth carbon budget and will use the bunker fuel sales method to calculate emissions.</p>
<p>International and European</p>	<p>See International Leadership chapter and Technical Annex.</p> <p>The UK revisited its world leading 2030 Nationally Determined Contributions and strengthened it with plans to expand the territorial scope to include the UK’s Crown Dependencies and Overseas Territories.</p>	<p>The UK has world leading ambition on climate change and is committed to advancing global climate action - in the run up to and at COP26 we narrowed the ambition gap, with net zero commitments covering 90% of the world’s economy, up from 30% two years ago, when the UK took on the COP26 Presidency.</p> <p>The UK has left the EU and is no longer bound by EU climate policies, allowing the UK to tailor policies in the national interest and deliver better outcomes. For example, we are undertaking the most significant reform of agricultural policy and spending in England in decades as we move from the EU’s Common Agricultural Policy (CAP) to our Environmental Land Management schemes, designed for our countryside and environment.</p>
<p>Devolved Circumstances</p>	<p>In addition to UK-level policy which would affect all nations, for some sectors, the analysis has used scaling factors to account for savings from Devolved Administrations where appropriate. Further analytical assumptions are outlined in the Sector Modelling discussion of the Technical Annex.</p>	<p>The proposals and policies in this report will directly reduce emissions across the nations of the UK, depending on their differing circumstances. There is potential for further reductions where the Devolved Administrations are taking action beyond what is reflected in our assumptions.</p>

Appendix F: Summary of impact of proposals and policies across sectors of the economy

1. The Net Zero Growth Plan sets out the impact on jobs and investment at a sector level. See the table below for a summary of impacts of proposals and policies on sectors.

Summary of the impacts of the Carbon Budget Delivery Plan proposals and policies on sectors

2. Proposals and policies (P&Ps) in this section refer to the list of P&Ps in Appendix B of the s14 report (tables 4-6). The descriptions of the P&Ps identify their proposed effects and anticipated impacts. This section seeks to summarise the anticipated impacts of these P&Ps on different sectors of the economy. For additional detail, please see the sector chapters in the Net Zero Growth Plan (NZGP).
3. There are risks inherent in the delivery of the defined suite of P&Ps. Please see Appendix D for sectoral summaries of delivery confidence, alongside risks and mitigations.

Power

4. P&Ps, as defined above, will have a significant impact on the power sector. The package creates markets for investment and sector growth, offers targeted funding support to reduce technology and infrastructure costs, and provides long-term clarity and certainty in terms of future revenue streams.
5. The package will result in the expansion of electricity networks, deployment of sufficient flexible capacity capable of replicating the role of unabated gas on the electricity system, expand renewables and remove planning barriers to support deployment of renewable and low carbon infrastructure to facilitate delivery of a more secure, cleaner and cheaper energy system. As a package the P&Ps will meet growing demand while achieving the goal of decarbonising the power system by 2035, subject to security of supply.

Impacts:

- a) Decarbonising the power sector whilst meeting a potential 60% increase in electricity demand has the potential to bring forward £275 – £375 billion of investment from both the private and public sectors. Investment in the electricity network will support the expected increase in peak demand, bringing forward £50-£150 billion of investment by 2037.
- b) Reinforcing the onshore electricity network could support 20,000-80,000 jobs by 2037, in addition to providing further employment in the supply chain. In addition, measures to increase storage and demand side flexibility could support up to 7,000 jobs across the supply chain by 2030. We are also working to build UK training and certification capability for onshore wind and solar.
- c) Our proposals and policies for growing the offshore wind sector in line with our 50GW ambition could support up to 90,000 direct and indirect jobs.
- d) For nuclear, we aim to take one nuclear project to Final Investment Decision this parliament and two in the next parliament, including Small Modular Reactors (SMRs). Each large-scale nuclear power plant could support up to around 10,000 jobs at peak construction, in addition to providing further employment in the supply chain.
- e) In 2021, power emissions were around 54 MtCO₂e making up around 12% of total UK net GHG emissions (including international aviation and shipping). Natural gas combustion currently makes up the largest share of emissions.
- f) Power emissions have decreased by 6% since 2019 and 73% since 1990. This decrease has resulted mainly from changes in the mix of fuels being used for electricity generation, including the decline of coal and growth of renewables; together with greater efficiency resulting from improvements in technology.
- g) In line with the sectoral breakdown of the indicative pathway set out in the Net Zero Strategy, compared to 2021 emissions levels, GHG emissions could need to fall by 42% to 48% on average over 2023-27, by 69% to 74% by 2030 and 79% to 84% on average over 2033-37.
- h) Support a range of technologies, including offshore wind, onshore wind, solar, tidal, geothermal and floating offshore wind through annual Contracts for Difference (CfD) Allocation Rounds.
- i) Streamline the planning system to support offshore wind, solar, nuclear power and carbon capture, and enable local technology like EV charge points and heat pumps.

Fuel Supply & Hydrogen

6. P&Ps are aimed at growing the emerging sector and putting it in a position to act as a key enabler to carbon savings across other sectors - including industry, power, transport and potentially buildings by replacing high-carbon fuels used today. The package provides clarity on long-term funding, the legal framework and production. Taken together P&Ps will support deployment of new low

carbon hydrogen production, reduce upfront infrastructure costs, and provide greater clarity and certainty around future demand and revenue streams.

7. P&Ps will also support decarbonisation in the oil and gas sector between 2027 and 2040, primarily through electrification. Working alongside regulators the package will result in the elimination of the practice of 'flaring' as soon as possible.

Impacts:

- a) Decarbonising our fuel supply and driving the new green industry of hydrogen has the potential to unlock £11 billion of private investment across production, transport, and storage, supporting 12,000 jobs by 2030. The UK has already built world leading capabilities - for example in electrolyser and fuel cell manufacture. There are over 200 companies working on hydrogen and fuel cell technologies in the UK, and we consistently feature in the top ten countries globally for hydrogen technology patent rates.
- b) Carbon Capture Usage and Storage (CCUS) forms part of the most cost-effective route to net zero, and represents a significant economic opportunity, with the potential to support up to 50,000 jobs by 2030 and deliver £4.3 billion in GVA by 2050 through exports.
- c) In 2021, fuel supply emissions were around 20 MtCO₂e making up around 4% of total UK net GHG emissions (including international aviation and shipping). Upstream oil and gas currently make up the largest share of these emissions. Fuel supply emissions have decreased by 18% since 2019 and 66% since 1990. Since 1990, the largest reductions have been from coal mining and gas leakage.
- d) In line with the sectoral breakdown of the indicative pathway set out in the NZS, compared to 2021 emissions levels, GHG emissions could rise by 8% or fall by 2% on average over 2023-27, fall by 22% to 33% by 2030 and 43% to 52% on average over 2033-37.
- e) Government and industry remain committed to the North Sea Transition Deal target to reduce GHG emissions from oil and gas production by 50% by 2030 from 2018.

Industry

8. P&Ps will result in an increased rate of adoption of low carbon technologies and processes in industrial sectors, particularly when these technologies are not yet fully cost- or price-competitive with established practices. In the process the package will support jobs and investment in areas with a rich heritage of manufacturing and engineering.
9. The package will support the delivery of a reduction of total UK energy demand by 15% from 2021 levels by 2030, across domestic and commercial buildings and industrial processes, with a particular focus on the role of the private sector and the stimulation of investment.

Impacts:

- a) Decarbonising our industrial sector has the potential to unlock £19 billion in public and private investment across the UK in line with our 2037 delivery pathway.
- b) This could support up to 4000 jobs directly in industry for the manufacture and installation of on-site energy efficiency measures and up to 50,000 jobs across industry, power and the transport and storage network for the deployment of CCS. This is supporting growth and levelling up across the country both in our industrial clusters and in dispersed industrial sites.
- c) In 2021, industry's GHG emissions were 76MtCO₂e, equivalent to 17% of whole economy GHG emissions. This represents a 3% decrease from 2019 levels, and a 52% drop from 1990 levels. The majority of these GHG emissions are from industrial combustion (57%).
- d) In line with the sectoral breakdown of the indicative pathway set out in the NZS, compared to 2021 emissions levels, GHG emissions could fall by 15% to 25% on average over 2023-27, 41% to 52% by 2030 and 62% to 75% on average over 2033-37.

Heat & Buildings

10. The package will result in more efficient, low-carbon buildings, reduced energy bills and healthier, more comfortable environments. At the same time, it will reduce our reliance on volatile fossil fuel prices, improving energy security and resilience.
11. Targeted regulation and new market-based mechanisms will result in reduced costs for consumers and businesses, attract greater private investment and strengthen supply chain resilience. New government funding will provide long-term funding certainty, supporting the growth of supply chains and skills.
12. The package will stimulate private investment and increase green finance options, galvanising supply chains, and increase public and business engagement with energy efficiency, including how to build public understanding of clean heat technologies and deliver greater take-up of support.

Impacts:

- a) Potential to unlock up to £10 billion in Gross Value Add (GVA) per year in the UK and supporting ~240,000 jobs in 2035. For example, research shows that heat networks could provide for c.20% of total UK heat demand by 2050, up from providing c.3% currently. This represents an investment opportunity of £60 – £80 billion, incentivised through policies such as heat network zoning and capital support schemes.
- b) Grow the UK heat pump market to 600,000 installations a year by 2028.
- c) In 2021, buildings emissions were around 88 MtCO₂e making up around 20% of total UK net GHG emissions (including international aviation and shipping). Residential

combustion currently makes up the largest share of emissions (78%), the vast majority of which is from heating. Buildings emissions have increased by 5% since 2019 and decreased by 19% since 1990. Annual buildings emissions are particularly volatile as impacted by external temperatures.

- d) In line with the sectoral breakdown of the indicative pathway set out in the NZS, compared to 2021 emissions levels, GHG emissions could fall by 7% to 17% on average over 2023-27, 25% to 37% by 2030 and 47% to 61% on average over 2033-37.
- e) Support generation of biomethane for injection into the gas grid
- f) Raise consumer standards and improve the performance of heat networks through a new market framework, and identify areas where heat networks are the lowest cost solution for decarbonising heat.
- g) Support industry to deliver trials ahead of taking decisions on the role of hydrogen in decarbonising heating.

Transport

13. P&Ps will result in the widespread decarbonisation of road, maritime and aviation transport as well as the supporting infrastructure. The package will also provide benefits across the UK, bolstering energy security, unleashing economic growth, and supporting a healthier population and environment. The P&Ps will bring about an accelerated shift to public transport and active travel following investment in the development and building of new walking, wheeling, and cycling routes.

Impacts:

- a) We have provided strong market signals and incentives to drive supply chain development, and this is already unlocking significant private investment. For example, our commitment to zero emission vehicles has led to hundreds of millions of pounds of private investment in charging infrastructure.
- b) We are a world leader in the production and use of low carbon fuels, with independent analysis conducted for Sustainable Aviation forecasting the potential for 65,000 jobs to be created by a UK SAF industry by 2050, and £1.9bn of direct GVA benefit per annum.
- c) The sector will see accelerated growth in the number of zero-emission vehicles on the road following implementation of the ZEV mandate and investment in charging infrastructure across the country.
- d) In 2021, domestic transport emissions were around 109 MtCO₂e making up around 25% of total UK net GHG emissions (including international aviation and shipping). Road transport makes up the vast majority of emissions. Domestic transport emissions have decreased by 11% since 2019 and 15% since 1990, though 2021 emissions were impacted by COVID-19 and resultant restrictions on movement.

- e) In line with the sectoral breakdown of the indicative pathway set out in the NZS, compared to 2021 emissions levels, GHG emissions for domestic transport could fall by 2% to 8% on average over 2023-27, 27% to 39% by 2030 and 61% to 73% on average over 2033-37.
- f) International aviation and shipping were significantly impacted by COVID-19 and resultant restrictions on movement. In 2021, international aviation and shipping emissions were around 20 MtCO₂e making up around 4% of total UK net GHG emissions (including international aviation and shipping). In 2019, international aviation and shipping emissions were around 44 MtCO₂e making up around 9% of total UK net GHG emissions (including international aviation and shipping).
- g) For IAS, in line with the sectoral breakdown of the indicative pathway set out in the NZS, compared to 2019 emissions levels due to severely depressed demand in 2021, GHG emissions could fall by 11% or rise by 5% on average over 2033-37.

Natural Resource, Waste & F-Gases

14. P&Ps will maximise co-benefits for climate and nature alongside other priority outcomes, including biodiversity, water quality, climate adaptation and economic growth. The package will ensure that from 2024, we will be paying farmers to provide a range of public goods, including actions to reduce emissions. The package will also lead to improved capture of data and evidence, with increased funding for R&D, increased engagement with external stakeholders to support waste policy and water management plans. P&Ps will also result in greater clarity on how we can deliver multifunctional landscapes that are resilient to our changing climate whilst meeting our needs for net zero, food production, environmental recovery, housing and infrastructure.

Impacts:

- a) Decarbonising agriculture and land use sectors and increasing carbon sequestration from land will provide opportunities for economic growth across rural communities.
- b) Unlocking private investment into nature-based solutions such as afforestation and peatland restoration will contribute to our goal to attract at least £1 billion of private finance into nature's recovery per year by 2030.
- c) In 2021, agriculture and other land use emissions were around 49 MtCO₂e making up around 11% of total UK net GHG emissions (including international aviation and shipping). Livestock (particularly cattle) currently make up the largest share of these emissions. Agriculture and other land use emissions have decreased by 2% since 2019 and 25% since 1990. The largest factor in this long-term fall has been an increase in the sink provided by forest land, with an increasing CO₂ uptake by trees as they reach maturity, in line with the historical planting pattern. In line with the sectoral breakdown of the indicative pathway set out in the NZS, compared to 2021 emissions levels, GHG emissions could fall by 1% to 12% on average over 2023-27, 11% to 24% by 2030 and 19% to 37% on average over 2033-37.

- d) In 2021, waste and F-gas emissions were around 30 MtCO₂e making up around 7% of total UK net GHG emissions (including international aviation and shipping). The largest emissions sources include landfill and air conditioning and refrigeration. Waste and F-gas emissions have decreased by 11% since 2019 and 66% since 1990. The reduction since 1990 is primarily due to reductions in emissions from landfill and halocarbon production. In line with the sectoral breakdown of the indicative pathway set out in the NZS, compared to 2021 emissions levels, GHG emissions could fall by 23% to 31% on average over 2023-27 43% to 51% by 2030 and 56% to 65% on average over 2033-37.
- e) The near elimination of biodegradable municipal waste being sent to landfill.
- f) Optimisation of current wastewater processes to reduce greenhouse gas emissions.

Greenhouse Gas Removals (GGR)

- 15. P&Ps will capitalise on the economic benefits from this emerging sector by scaling-up First of a Kind technologies to deliver new export opportunities and high-quality green jobs across the UK, supporting energy security and levelling-up.
- 16. The package will provide clarity on innovation funding, business models, monitoring, reporting and verification. Successful delivery will see the sector mature and grow significantly through the mid-to-late 2020s. This will be both in terms of a growth in the evidence base of the emerging technologies, and in terms of industry and public confidence in the long-term prospects of the deployment of GGRs at-scale in the UK.

Impacts:

- a) Funding a variety of innovative GGR technologies, including several first-generation Direct Air Capture (DAC) technologies through the DAC and Greenhouse Gas Innovation Programme. This programme will produce several operational pilot plants by 2025, and will also realise investment, jobs, skills and technology in this nascent sector.
- b) £100m innovation investment in key technologies, will help to move nascent technologies from prototype stage through to demonstration and deployment.
- c) One example of a project being funded is a consortium led by Sizewell C, who are developing an innovative heat-powered Direct Air Capture (DAC) demonstrator plant designed to capture low carbon waste heat from a nuclear power plant. This technology could offer increased efficiency and less reliance on electricity, therefore reducing the cost of removing carbon dioxide from the atmosphere. A scaled-up DAC plant linked to Sizewell C could utilise around 400 MW of heat from the nuclear power plant to capture 1.5 million tonnes of CO₂ per year.
- d) As set out in the Net Zero Strategy, to meet our CB4, NDC and CB6 targets, we set an ambition to deploy at least 5 MtCO₂e p.a. of engineered removals by 2030, potentially rising to 23 MtCO₂e p.a. by 2035.

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Appendix 4: CC 3.2 Friends of the Earth v Secretary of State for Energy Security and Net Zero



Neutral Citation Number: [2024] EWHC 995 (Admin)

Case No: AC-2023-LON-001856
AC-2023-LON-002005
AC-2023-LON-002008

IN THE HIGH COURT OF JUSTICE
KING'S BENCH DIVISION
ADMINISTRATIVE COURT

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 03/05/2024

Before :

MR. JUSTICE SHELDON

Between :

(1) FRIENDS OF THE EARTH
(2) CLIENTEARTH
(3) GOOD LAW PROJECT

Claimants

- and -

SECRETARY OF STATE FOR ENERGY
SECURITY AND NET ZERO

Defendant

David Wolfe KC, Catherine Dobson, Nina Pindham (instructed by Leigh Day) for the First Claimant

Jessica Simor KC, Emma Foubister (instructed by ClientEarth) for the Second Claimant

Peter Lockley (instructed by Good Law Practice) for the Third Claimant

Jonathan Moffett KC, Christopher Badger, Robert Williams (instructed by the Government Legal Department) for the Defendant

Hearing dates: 20-22 February 2024

Approved Judgment

This judgment was handed down remotely at 10.30am on 3 May 2024 by circulation to the parties or their representatives by e-mail and by release to the National Archives.

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Mr. Justice Sheldon :

1. This case concerns the statutory process that Parliament has prescribed for the United Kingdom to achieve net zero greenhouse gas emissions by 2050. Under the Climate Change Act 2008 (“the CCA 2008”), the relevant Secretary of State (now the Secretary of State for Energy Security and Net Zero, and the Defendant to these proceedings) is required to set carbon budgets for the United Kingdom in relation to successive five-year periods.
2. In a judgment handed down on 18th July 2022 in the case of *R (Friends of the Earth Ltd) v Secretary of State for Business, Energy and Industrial Strategy* [2023] 1 WLR 225 (“*FoE (No.1)*”), Holgate J decided that decisions taken by the Secretary of State for Business, Energy and Industrial Strategy (“BEIS”) (the Minister who previously had responsibility under the CCA 2008) in 2021 failed to comply with the Secretary of State’s duty under section 13(1) of the CCA 2008 to prepare such proposals and policies as he considered would enable relevant carbon budgets up to and including the sixth carbon budget (relating to the period 2033-2037) (“CB6”) to be achieved, and failed to fulfil the Secretary of State’s obligation pursuant to section 14(1) of the CCA 2008 to set out for Parliament his proposals and policies for meeting the relevant carbon budgets.
3. Holgate J ordered the Secretary of State for BEIS to lay before Parliament a report which was compliant with section 14 of the CCA 2008 by no later than 31st March 2023. The Secretary of State for Energy Security and Net Zero reconsidered matters and purported to comply with sections 13 and 14 of the CCA 2008. On 31st March 2023, he laid before Parliament the Carbon Budget Delivery Plan (“the CBDP”). In these proceedings, the Claimants contend that the Secretary of State failed to comply with sections 13 and 14 of the CCA 2008.
4. The hearing before me was for permission to be followed by a substantive hearing if permission was granted: a “rolled up” hearing.

Background

5. The general background to the requirement for the setting of carbon budgets can be found in Holgate J’s judgment in *FoE (No.1)* at paragraphs 2-12:

“2. In 1992 the United Nations adopted the United Nations Framework Convention on Climate Change (“UNFCCC”). Following the 21st Conference of the parties to the Convention, the text of the Paris Agreement on Climate Change was agreed and adopted on 12 December 2015. The United Kingdom ratified the Agreement on 17 November 2016.

3. Article 2 of the Agreement seeks to strengthen the global response to climate change by holding the increase in global average temperature to 2°C above pre-industrial levels, and by pursuing efforts to limit that increase to 1.5°C. Article 4(1) lays down the objective of achieving “a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases [“GHGs”] in the second half of this century.”

That objective forms the basis for what is often referred to as the “net zero target”, which will be satisfied if the global level of any residual GHG emissions (after measures to reduce such emissions) is at least balanced by sinks, such as forests, which remove carbon from the atmosphere.

4. Article 4(2) requires each party “to prepare, communicate and maintain successive nationally determined contributions [“NDCs”] that it intends to achieve”. Each party’s NDC is to represent a progression beyond its current contribution and reflect its “highest possible ambition” reflecting inter alia “respective capabilities” and “different national characteristics” (article 4(3)).

5. The UK responded to the Paris Agreement in two ways. First, section 1 of the Climate Change Act 2008 (“CCA 2008”) was amended so that it became the obligation of the Secretary of State for Business, Energy and Industrial Strategy to ensure that “the net UK carbon account” for 2050 is at least 100% lower than the baseline in 1990 for CO₂ and other GHGs, in substitution for the 80% reduction originally enacted (see the Climate Change Act 2008 (2050 Target Amendment) Order 2019 (SI 2019 No.1056)). That change came into effect on 27 June 2019. Second, on 12 December 2020 the UK communicated its NDC to the UNFCCC to reduce national GHG emissions by 2030 by at least 68% compared to 1990 levels, replacing an earlier EU based figure of 53% for the same year.

6. According to the Net Zero Strategy (“NZS”), the UK currently accounts for less than 1% of global GHG emissions (p.54 para. 31).

7. Section 4 of the CCA 2008 imposes a duty on the Secretary of State to set an amount for the net UK carbon account, referred to as a carbon budget, for successive 5 year periods beginning with 2008 to 2012 (“CB1”). Each carbon budget must be set “with a view to meeting” the 2050 target in s.1. The ninth period, CB9, will cover the period 2048-2052 for which 2050 is the middle year. Section 4(1)(b) imposes a duty on the Secretary of State to ensure that the net UK carbon account for a budgetary period does not exceed the relevant carbon budget. Thus, the CCA 2008 has established a framework by which the UK may progress towards meeting its 2050 net zero target.

8. The net UK carbon account referred to in s.1 and s.4 relates to carbon dioxide and the other “targeted” GHGs listed in s.24 (methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride). GHG emissions are expressed for the purposes of the Act in tonnes of “carbon dioxide equivalent” (s.93(1)). That term refers to either a tonne of CO₂ or an amount

of another GHG with “an equivalent global warming potential” (“GWP”).

9. The Secretary of State has set the first 6 carbon budgets. Each has been the subject of affirmative resolution by Parliament. CB6 came into force on 24 June 2021 (The Carbon Budget Order 2021 – SI 2021 No. 750) and sets a carbon budget of 965 Mt CO₂e (million tonnes of carbon dioxide equivalent) for the period 2033 – 2037.

10. The six carbon budgets and their relationship to the 1990 baseline are summarised below:

Carbon budget	Period	Target emissions Mt CO ₂ e	Percentage reduction from 1990 level
1	2008–2012	3,018	25%
2	2013–2017	2,782	31%
3	2018–2022	2,544	41%
4	2023–2027	1,950	55%
5	2028–2032	1,725	60%
6	2033–2037	965	78%

Sources: NZS: p. 306 para.5 and p. 310 Table 1; *R (Transport Action Network Ltd) v Secretary of State for Transport* [2022] PTSR 31 at [50].

11. The UK overachieved CB1 by 36 Mt CO₂e and CB2 by 384 Mt CO₂e. It is on track to meet CB3 (NZS p.306 para.5 and endnote 4).

12. CB6 is the first carbon budget to be based on the net zero target in the amended s.1 of the CCA 2008. The previous budgets were based on the former 80% target for 2050. CB6 is also the first carbon budget to include emissions from international aviation and shipping attributable to the UK. It is common ground that the target in CB6 is substantially more challenging than those previously set.”

6. In accordance with the statutory framework under the CCA 2008, in October 2021 the Secretary of State for BEIS approved proposals and policies which he considered would enable CB6 to be achieved, and on 19th October 2021 he laid before Parliament a report setting out those proposals and policies: the Net Zero Strategy (“the NZS”).
7. In *FoE (No.1)*, the Claimants (who are the same parties as are before the Court in the present proceedings) challenged the NZS, and the decision to approve proposals and policies. *Holgate J* upheld the challenge, deciding that the Secretary of State for BEIS

had acted unlawfully with respect to his duties under both sections 13 and 14 of the CCA 2008. Holgate J made the following declarations:

“3. In determining that the proposals and policies set out in the Net Zero Strategy will enable carbon budgets set under the Climate Change Act 2008 (‘the Act’) to be met, the Defendant failed to comply with section 13(1) of the Act by failing to consider

(i) the quantitative contributions that individual proposals and policies (or interrelated group of proposals and policies) were expected to make to meeting those carbon budgets;

(ii) how the identified c.5% shortfall for meeting the sixth carbon budget would be made up, including the matters set out at [216] of the judgment and

(iii) the implications of these matters for risk to delivery of policies in the NSZ and the sixth carbon budget.

4. The Net Zero Strategy of 19 October 2021 failed to comply with the obligation in section 14(1) of the Act to set out proposals and policies for meeting the carbon budgets for the current and future budgetary periods

(i) by failing to include information on the quantitative contributions that individual proposals and policies (or interrelated group of proposals and policies) were expected to make to meeting those carbon budgets and

(ii) by failing to address the matters identified in [253] of the judgment.”

8. Following Holgate J’s Order, the Secretary of State looked again at the policies and proposals and produced the CBDP. As part of this process, it was necessary to identify the emissions savings that needed to be made in each of the periods for the fourth, fifth and sixth carbon budget periods: 2023-2027, 2028-2032 and 2033-2037. Essentially, the emissions limit for each of the budgetary periods was compared to a projection of net emissions for the relevant period, referred to as a “baseline”. The difference between the “baseline” and the emissions limit represented the volume of additional emissions savings that needed to be made in order to meet the relevant carbon budget.
9. The projection of net emissions was based on the Government’s Energy and Emissions Projections 2021-2040 (“the EEP”). This was published in October 2022, and set out a projection of future greenhouse gas emissions based on a variety of assumptions as to factors such as future economic growth, the prices of fossil fuels, the cost of electricity generation, and population growth. It also took account of policies that are likely to have an impact on greenhouse gas emissions, where those policies have already been implemented or are at a near final stage of design and funding for them has been agreed; the Government has a high degree of confidence that these policies will be delivered. This produced what is referred to as “the EEP baseline”. The EEP baseline was adjusted

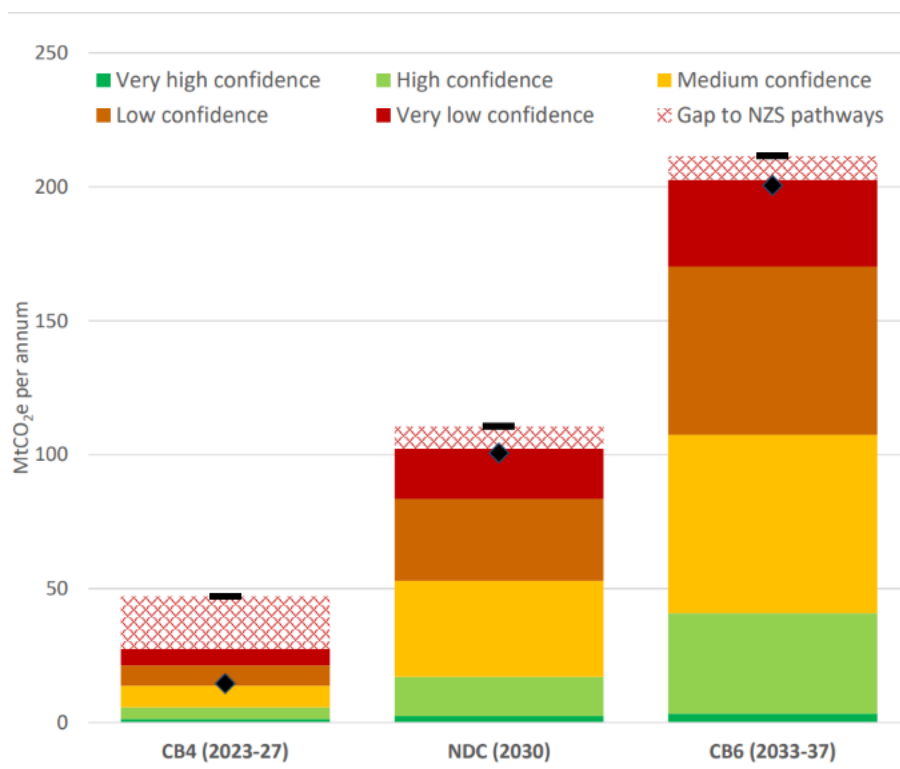
before the CBDP was finalised, as a result of various changes that were identified after its initial publication.

10. The adjusted EEP baseline was of 1,958 Mt CO₂e of greenhouse gas emissions across the five-year period of CB6. The emissions limit for CB6 is 965 Mt CO₂e. Accordingly, proposals and policies that would produce emissions savings of 993 Mt CO₂e (in addition to those projected to result from the EEP policies) needed to be identified by the Secretary of State to meet the budget for CB6.
11. A large number of civil servants were involved in the work that led up to the advice to the Secretary of State as to the proposals and policies for meeting the budget for CB6. These included officials referred to as “Sector Leads”: policy officials within the Department for Energy Security and Net Zero (“DESNZ”) with responsibility for specific sectors within which emissions savings are to be made (power, fuel supply, heat and buildings, transport, natural resources and waste, F-gases, and agriculture, forestry and other land use); and officials within “Sector Teams”, who are teams of officials in different government departments who have primary responsibility for overseeing the decarbonisation of the sectors for which they are responsible and for devising, designing, implementing and maintaining the proposals and policies that result in emissions savings. In a witness statement for the present proceedings, Chris Thompson, the Director of the Net Zero Strategy Directorate in the Department for Energy Security and Net Zero, explained that the relevant Sector Teams and Sector Leads working together were well-placed to assess risk to delivery of a particular proposal or policy, and significant weight was placed on their judgments in making recommendations to the Secretary of State for his section 13 decision.
12. The Secretary of State who took the decisions that are in issue in these proceedings, the Rt Hon Grant Shapps MP, was appointed as Secretary of State for BEIS on 25th October 2022. On 8th November 2022, he was provided with an introductory brief for his new role in delivering net zero. He subsequently assumed the role of Secretary of State for Energy Security and Net Zero when that office was created on 7th February 2023.
13. The introductory brief described the legally binding target to reduce greenhouse gas emissions to net zero by 2050. It explained that to ensure a phased and realistic transition towards that target, a system of carbon budgets in five-year blocks had been established. The Secretary of State was informed of his legal duties and was told about the outcome of the judicial review challenge: *FoE (No. 1)*. The Secretary of State was told that:

“Last year the government published the Net Zero Strategy, which set out a detailed plan for achieving our emissions targets up to 2037, and a vision for a market-led, technology-driven transition with emphasis on growth, private investment, and going with the grain of consumer choice. Our most recent projections from August show **we have sufficient savings to meet carbon budgets and the NDC if all planned policies are delivered in full, but there are increasing delivery risks and little or no headroom to later targets** (Annex C). Further developments since August may have affected this position. We will provide further advice on the overall carbon picture.”

(Emphasis in the original).

14. It was explained to the Secretary of State that the analysis on progress against carbon budgets had been subject to an assurance process. There were said to be “significant uncertainties” in the analysis. The Secretary of State was told that: “Policy design and delivery can affect savings, represented by ‘delivery confidence’ reflecting judgments of officials. Emission savings are also conditional on projections of GDP, population, fuel prices, and technology costs and availability.”
15. At Annex C to the introductory brief, the Secretary of State was provided with a bar chart which showed the projected emissions savings from planned policies across all sectors of the economy, with carbon savings designated by level of delivery confidence, based on data as of August 2022. The bar chart related to quantified proposals and policies and did not take into account the effects of unquantified proposals and policies, or other factors that may improve or reduce the prospects of meeting the carbon budgets. The bar chart shows the following:



16. The bar chart - illustrated in colours: including red, amber and green - showed that just over 50% of the emissions savings that were required to meet CB6 were designated as “Very high confidence”, “High confidence” or “Medium confidence”. The remainder were rated as either “Low confidence” or “Very low confidence”. The text accompanying the chart stated that “projected carbon savings would be sufficient to meet these carbon targets *if all planned policies were delivered in full*” (emphasis added).
17. A sectoral summary was also provided to the Secretary of State. This set out a description of the progress to date in each sector, as well as the key policies in development with the largest carbon impact. For the Industry sector, for example, it was stated that “Manufacturing and construction account for c.14% of UK emissions.

Government has increased ambition for over the 2030s, but we are starting to see slips in delivery which risk meeting those commitments in full.”

18. A further submission was sent to the Secretary of State on 30th November 2022. This included the following advice:

“There are also likely to be challenges in showing we are making sufficient emission savings towards our carbon budgets. Latest projections suggest you have sufficient savings to meet carbon budgets if all planned policies and proposals are delivered in full (Net Zero Strategy policies and subsequent policies changes such as BESS). But there are significant delivery risks and little or no headroom particularly for later carbon budgets. We also expect this position to worsen over the coming months with likely policy announcements that, while helpful in showing we are progressing on our plans, are not achieving the emission savings we originally expected, for example in CCUS, ZEV mandate and Environmental Land Management Schemes.

At the time of the Net Zero Strategy, we had quantifiably secured 95% of the savings needed to reach carbon budget 6, which included many early-stage policies. We think this could slip closer to 85% due to anticipated changes in policy ambition, technical updates and delivery risk and delays. Whilst some of this is to be expected as we move from strategy to implementation, it highlights the dependencies on upcoming decisions. We will need to address the reduction in quantifiable savings in our response to the Court Order”.

(Emphasis added).

19. The next briefing to the Secretary of State about the proposals and policies and the proposed CBDP was sent in early March 2023. In the meantime, officials had been reviewing the proposals and policies, assessing the risks to delivery and identifying the mitigating measures that could be put in place. The details of carbon savings by policy were collected through a mechanism known as a ‘Policy Commission’, which took place quarterly. For the March Policy Commission, officials were set a deadline to submit returns by 25th January 2023. They were asked to provide information on additional policies and proposals which could be ‘quantified’, as well as those which could be ‘unquantified’. The former were to be preferred on the basis that “a greater reliance on unquantified policies carries increased legal risk”.
20. With respect to delivery risks, it was explained that the judgment of Holgate J in *FoE (No. 1)* was clear that the Secretary of State “needs sufficient information on delivery risks to make an informed judgment about whether carbon budgets can be met. This must include qualitative explanation of risks and planned mitigations, in addition to Red Amber Green ratings, building on existing work on monitoring delivery risks.”
21. Returns were to be provided on various templates. These needed to be cleared by members of the Senior Civil Service within the relevant government departments that were providing information. One of the tabs on the relevant template was to be used to

capture new information on policy-level milestones and RAG (that is, Red, Amber, Green) ratings to reflect progress against these. It was explained that “Collecting this information will allow the NZS Directorate to continue to track progress across the NZS policy portfolio and help identify where we can work across government to maintain ambition and mitigate risks”. With respect to the RAG ratings, it was stated that:

“This section captures a policy level assessment of the confidence of delivering the carbon savings to the same level of ambition and timelines assumed by the projected carbon savings. (n.b. if a policy does not have projected carbon savings then please provide the RAG rating on the basis of delivering the policy to the expected timelines assumed in your policy portfolio). Please refer to table 3 below for guidance on selecting RAG ratings.

To meet the Court Judgment, we require **additional narrative detail** in this commission to support your carbon delivery confidence ratings at policy level. For all policies, this should:

- Clearly set out any barriers to delivery i.e. technical, political, funding, resourcing, etc.
- Provide an estimate of the impact these barriers have in the delivery of the projected savings, focusing on the impact on timing of delivery and effect on total carbon emissions delivered.

If your policy is rated Red, Amber/Red or Amber this should also:

- Explain why Ministers can still treat these projected savings as deliverable by setting out detail on a timebound ‘return to Green plan’ or mitigating actions and the expected impact on projected savings and delivery confidence. The lower the confidence rating and the higher the projected carbon savings the more detail is required.

This is important because the Minister will need to have confidence that the package of policies and proposals will enable carbon budgets to be met, and how delivery risks will be mitigated.”

(Emphasis added).

22. Examples were given as to how a Red, Amber-Red, or Amber Policy could be described:

“Biomass (for illustrative purposes only, not accurate) Clearly set out the barriers to delivery: No funding was secured at SR21.

Provide an estimate of the impact these barriers have in the delivery of the projected savings: This means that all savings have been pushed back, and the longer term for Biomass savings are more at risk. Delivering the projected savings is still possible and is dependent on future demand for domestically sourced biomass and the outcome of the Biomass Strategy.

Explain why Ministers can still treat these projected savings as deliverable/set out a timebound ‘return to green’ plan: Continued engagement with BEIS through Biomass Strategy process required to obtain agreement on demand for biomass, and therefore the upscaling required. Further work is also required to test the feasibility of the biomass deployment metrics that underpin these figures. Provided these mitigations are delivered within X timeframe, delivery of these savings projections, although difficult remain possible to achieve”.

23. The RAG ratings themselves were described as follows:

“Green: Very high degree of confidence. Successful delivery of projected carbon emission savings . . . appears likely (**very high degree of confidence**) and there are no major outstanding issues that at this stage appear to threaten delivery of carbon targets.

Amber/Green: High degree of confidence. Successful delivery of projected carbon emission savings . . . appears probable (**high degree of confidence**); however, there are potential risks. Continual monitoring required to ensure this does not materialise into wider issues threatening overall delivery of projected carbon savings.

Amber: Medium degree of confidence. Successful delivery of projected carbon emission savings . . . appears feasible (**medium degree of confidence**) significant issues already exist, requiring attention. These appear resolvable at this stage and if addressed promptly, should not present . . . under-delivery of projected carbon savings.

Amber: Low degree of confidence. Successful delivery of projected carbon emission savings is in doubt (**low degree of confidence**), with major risks or issues apparent, or the policy is at an early stage of development with a need for careful monitoring that we are achieving sufficient progress. Urgent action is needed to ensure these are addressed, but this may still result in under-delivery of carbon savings without mitigating actions.

Red: Very low degree of confidence. Successful delivery of projected carbon emission savings appears potentially unachievable (**very low degree of confidence**). There are major issues, which do not currently appear manageable or resolvable,

or the policy is at an early stage of development without clarity on how sufficient progress will be made. Significant action will be required to resolve these issues now or in the future, and without this there will be under-delivery of carbon savings, with a need for overall viability to be reassessed.”

(Emphasis in original).

24. Responses were provided by various government departments. For the present proceedings the Secretary of State disclosed returns from one department: the Department for Environment, Food and Rural Affairs (“DEFRA”). This included a note dated January 2023, headed “Net Zero Pathway Commission Return”. Reference was made in the note to the contribution from the Devolved Administrations (referred to as “DAs”).
25. In the note, it was stated that the savings returned by DEFRA included a mix of UK-wide and England savings, and the distribution of savings had been calculated using “a range of bespoke scalers with no bespoke engagement with the DAs on whether and how they will be delivering their portions of the allotted savings.” It was stated that the Devolved Administrations may choose to implement different policies across environment and farming sectors. It was stated that “Currently DEFRA is not resourced to track or monitor DAs’ contributions to UK wide savings and thus the numbers provided should not be treated as either accurate or reliable. We welcome further guidance from BEIS on their strategy for assuring DA contributions across the whole economy.”
26. The DEFRA return also stated that the department calculated a total gap of 13% between their Net Zero Strategy effort share (that is, the share of emissions which each relevant government department agreed that it would aim to contribute to the overall target) and the current quantified list for England in CB6, and a gap of 13% for the UK. 63% of the gap at UK level was accounted for by changes to their policy projections. DEFRA also stated that their emissions savings projections generally represented:

“maximum feasible savings rather than a likely scenario. Delivery confidence is low for many of these emissions savings and scientific uncertainty limits precision. Key assumptions underpinning these numbers that are subject to high levels of uncertainty include land area that will be available for peatland restoration and afforestation; policy uptake rates by businesses, land managers and farmers; and sector-level economic growth projections.”
27. In February 2023, Sector Leads were written to, asking them to provide a line-by-line delivery risk summary for the section 13 advice. It was explained that:

“for the section 13 advice we need to explain the delivery risk of each individual policy in a way that most easily allows DESNZ SoS to understand the delivery risk of the package, at both a collective and individual policy level. This is necessary to ensure DESNZ SoS has the appropriate level of detail to make a rational

decision on whether the package of policies and proposals is sufficient to enable carbon budgets to be met.”

28. Sector Leads were commissioned, therefore, to draft this for their sector:

“We need you to describe and explain the delivery risk for each individual policy and proposal, and then explain the mitigation we are taking to address this delivery risk and why that gives us the necessary confidence in delivery of our policies.”

29. A guidance sheet was provided to assist with this process. The purpose of this guidance was explained as follows:

“Describe and explain the delivery risk for each individual policy and proposal, and then explain the mitigation we are taking to address this delivery risk and why that gives us the necessary confidence in delivery of our policies. We are not seeking to 'categorise' policies in a uniform way. Instead we want to explain the delivery risk of each individual policy in a way that most easily allows DESNZ SoS to understand the delivery risk of the package at both a collective and individual policy level”.

30. Sector Leads were given guidance as to how to set out the explanation for the delivery risks by a series of prompts. These would, it was hoped, enable the Secretary of State to understand the delivery risk when looking at the package of policies and proposals as a whole. The prompts were as follows:

“For policies that are labelled green or green-amber in the commission returns, the new descriptions could start: 'We have high certainty in the delivery of this policy and confidence/certainty that the policy can be its associated carbon savings'. A single bespoke line should then be added to explain why.

For policies that are labelled amber in the commission returns, please begin by describing the actual risks faced, with a couple of short lines. This could then be finished with a summary line such as 'These risks require attention, however appear resolvable based on the actions already underway.'

For policies that are labelled amber-red or red in the commission returns, whose rating is not due to uncertainty, but real and present risks, please begin by describing the actual risks faced (with a couple of short lines) and then finishing with a summary sentence, such as: If not mitigated, these risks could materially affect the successful delivery of the savings in full associated with the policy.

For policies that are labelled amber-red or red in the commission returns, whose rating is due to uncertainty, please begin by

stating 'Uncertain delivery risk', and then list as many of the below reasons as applicable (and any others that may apply).

a. Funding is subject to a future spending review round and therefore cannot be confirmed now, creating inevitable uncertainty.

b. The policy has yet to be consulted on.

c. The policy uses a technology that is nascent, creating inherent uncertainties and risk

d. The policy relies on another part of the NZ system/another NZ policy that is also not completed

e. The policy requires additional research to provide greater clarity on savings potential and to inform further policy development.

f. The policy requires further appraisal of options”

31. With respect to “Delivery risks: mitigation”, the guidance was as follows:

“For green policies, leave blank

For all amber and reds: please include short summaries of the Template ‘route to green’ data, with added line on why this gives us confidence/certainty that the policy can be delivered and deliver the associated carbon savings.”

32. In his evidence, Mr Thompson stated that he was aware that one of the consequences of the requests for narrative text was that some specific risks that had been identified in the returns to the earlier December Commission might not be included in that text; this was a likely consequence of requesting that the information be presented in a more concise and digestible way. Mr Thompson explained that he did not consider that this was problematic, especially as not all of the risks identified in the returns to the December commission were material from a net zero perspective.

33. On 24th March 2023, a draft submission was sent by Mr Thompson to the Secretary of State on proposals and policies to enable the carbon budgets to be met. A further, slightly updated, version of the draft was sent on 27th March 2023.

34. The 27th March submission stated that it “sets out the current package of proposals and policies that, in our view, enable Carbon Budgets 4, 5 and 6 . . . to be met”. The Secretary of State was told that he was required to make a judgment and be satisfied that this package will enable those Carbon Budgets to be met. He was also asked to approve the level of detail to be published in the CBDP, as well as a draft version of the CBDP.

35. The submission included the following:

“Background

5. To meet the Court Order and fulfil your statutory duties under the Climate Change Act 2008, you have a duty to prepare a package of proposals and policies that you consider will enable Carbon Budgets to be met, with a view to meeting the 2050 net zero target.

6. When making this decision, you should consider the quantified and unquantified policies and proposals, particularly timescales and delivery risks (Table 2 of Annex B). As there is a gap between the total quantified emissions savings of our proposals and policies and what is required to meet Carbon Budget 6, you must also consider whether and how that shortfall will be made up (Annex B). Finally, you must take into account wider matters in connection with Carbon Budgets under section 10 of the CCA, the contribution of these proposals and policies to sustainable development . . .

Quantified savings to meet Carbon Budgets

7. Any emissions savings forecast contains inherent uncertainty due to the long-term nature of a 15 year transition and the complexity of the net zero system. Broader macroeconomic factors will determine the exact quantity of emissions savings required to meet Carbon Budgets meaning that we will continue to review and adapt the proposals and policies in this package, especially those at earlier stages of development.

8. Based on current projections, our view is that the package of proposals and policies that we can quantify will deliver sufficient quantified savings to meet CB4 and CB5, and 97% of CB6. This incorporates recent Budget announcements, comments from [redacted], and the response to Skidmore recommendations [this was a reference to the independent review of the Government's approach to delivering its net zero target, led by a former Minister for Energy and Clean Growth, which had reported its findings on 13th January 2023] . . .

9. The Technical Annex (Annex D) sets out the methodology for the quantification of policies and proposals. You should note that this quantification relies on the package of proposals and Policies being delivered in full. Our advice is that it is reasonable to expect this level of ambition – having regard to delivery risk (see Annex B) and the wider context.

Considerations in making up the shortfall (further detail in Annex B)

10. You must be satisfied that further, as yet, unquantified emissions savings can be made in CB6 to judge that the package will enable carbon budgets to be met. We are confident that further savings can be delivered through proposals and policies

that will deliver emissions savings but cannot currently be quantified, e.g. by early-stage proposals and policies where the evidence is still being assessed. See Table 3 of Appendix B (Annex B).

11. The package is further strengthened through the inclusion of a range of cross-cutting proposals and policies which do not directly deliver emissions savings but enable and support our quantified proposals and policies – whether through leveraging the investment needed for technological growth or delivering the green jobs needed for the transition. This supports with de-risking delivery across the package. We can also expect that some of these areas could lead to additional carbon savings: for example our package of policies to drive innovation is likely to lead to new low-carbon technologies which may accelerate the transition.

12. Wider factors may also impact our ability to meet carbon budgets. Areas of uncertainty in our modelled projections could lead to delivery of emissions savings being faster or slower than expected. The package also does not fully reflect emissions savings from policies developed outside central government: such as in local councils and Devolved Administrations, nor does it reflect potential future shifts in consumer behaviour (see Annex B).

Delivery risk and further considerations (further detail in Annex B)

13. To assess whether the proposals and policies are sufficient, you must consider the risks to delivery of the emissions savings that each of the proposals and policies carries, see Tables 2 and 3 of Appendix B (Annex B). We have included summaries of key delivery risks for each sector to aid your understanding in Appendix D (Annex B). A number of proposals and policies across sectors currently carry high delivery risk. This is expected given that many of these will be implemented over the next 15 years. We expect delivery confidence for many of these proposals and policies to improve as they are implemented (demonstrated by the high delivery confidence attached to significant savings already in delivery phase) and have suggested potential mitigations to improve delivery confidence outlined in Tables 2 and 3 of Appendix B (Annex B). ...”

(Emphasis in original).

36. In his witness statement, Mr Thompson has sought to explain the underlined text at paragraph 9 of the submission. Mr Thompson stated that the underlined text was not intended to convey to the Secretary of State that he should conclude or assume, or otherwise proceed on the basis, that each and every proposal and policy would be delivered in full. Rather, the text was intended to make the point that the total volume

of quantified emissions savings (i.e. those projected to be achieved by the quantified proposals and policies) had been calculated on the basis that the package of proposals and policies would be delivered in full, i.e. the total figure represented the sum of all of the individual quantified emissions savings. Some of the proposals and policies might under-deliver, just as some might over-deliver and this was reflected in the overall sum.

37. In his witness statement, Mr Thompson also stated that quantifying and weighing risk for each and every policy, differentiating the relative risk of every policy proportionately, adjusting for the degree of systemic risk posed by each policy as well as each policy's upside potential that may deliver higher emission savings than planned, would be extraordinary in its complexity and in the additional resource that it would require.
38. A read-out of the Secretary of State's decision was sent on 28th March 2023. This stated the following:

“He was content with the level of detail set out and, considering the legal advice, feels that it allows us to meet our obligations

He feels he has sufficient confidence that the policies included in our energy and emissions projections are expected to deliver over 100% of the carbon savings needed for CB4 and >40% of the savings needed for CB6

He has noted that quantified proposals would deliver 94% of the nationally determined contribution and 97% of CB6, and comments that this is very good to see

He has considered the unquantified proposals and concludes that they should be capable of delivering significant further savings, with the usual understanding that potential and early stage proposals carry delivery risk

He has further noted that the package does not fully reflect emissions savings from policies developed outside government, particularly local government

He considered the other matters outlined in annexes A-F, including the equalities impact assessment and the risks explanations and mitigations

Overall, he agreed with the advice that the package will enable carbon budgets 4-6 to be met”.

39. A further submission was sent to the Secretary of State later on 28th March 2023. This contained some amendments, and asked the Secretary of State to confirm his earlier judgment that he was satisfied that the package of proposals and policies as a whole will enable carbon budgets through to CB6 to be met. The Secretary of State was also asked to approve the final version of the CBDP and associated Technical Annex to be laid before Parliament.

40. The further submission explained as part of the background that:

“Since the submission of that advice, a number of changes have been incorporated into the package of proposals and policies following final analytical assurance and changes due to final cross government agreements. These are outlined at Annex C, alongside an assessment of their overall impact on the package of proposals and policies. These are largely naming changes and do not impact the quantified position against carbon budgets, nor, taking into account unquantified policies and wider factors, the ability to meet carbon budgets, as outlined in the advice of 27 March.”

41. Under a heading “Confirming your decision”, it was stated that:

“We have continued to undertake analytical assurance across the full package of proposals and policies. We had prioritised your legal obligation under the CCA 2008 to prepare a package of proposals and policies that will enable carbon budgets through to CB6 to be met. This process has confirmed that the proposals and policies that we can quantify will deliver sufficient quantified savings to meet CB4 and CB5, and 97% of CB6, and therefore does not change our recommendation in the advice of 27 March.”

42. With respect to the CBDP, the submission of 28th March 2023 stated as follows:

“Level of detail included in the Carbon Budget Delivery Plan

9. We plan to lay the CBDP and Technical Annex before Parliament on 30 March. To meet the Court order and to fulfil your statutory duties under section 14 of the Climate Change Act 2008 (CCA), these documents set out:

- The proposals and policies you have concluded enable carbon budgets to be met (see Tables 5 and 6 of the CBDP);
- The timescales over which those proposals and policies are expected to take effect (see Tables 5 and 6 of the CBDP);
- An explanation of how the proposals and policies set out in this report affect different sectors of the economy (see pp. 204-210 of the CBDP);
- The implications of the proposals and policies as regards the crediting of carbon units to the net UK carbon account for each budgetary period covered by the report (see Section 1 of the Technical Annex).

10. The level of detail we recommend publishing in the CBDP reflects its function of promoting public transparency and

enabling Parliamentary scrutiny of the Government's climate measures.

11. You agreed to publish sectoral summaries of delivery risk in the CBDP, rather than outlining delivery risks of each individual proposal or policy (see pp.190-200). This is because we do not consider it appropriate or necessary to set out information about specific delivery risks for each of the proposals and policies as we have for you in the advice of 27 March. That was to assist you to look at the contribution of each measure and associated delivery risk to make the judgement that the package of proposals and policies will enable carbon budgets 4, 5 and 6 (CB4, CB5 and CB6) to be met.

...

13. The report relates to proposals and policies of Devolved Administrations and was prepared in consultation with those authorities as required by the CCA 2008. A copy of this report will be shared with those authorities following your approval of the CBDP.”

43. Annex B to the Section 13 advice to the Secretary of State set out the various quantified and unquantified proposals and policies that would contribute towards the emissions savings required to meet the Carbon Budgets along with their delivery risks, as well as the consideration of factors under section 10 of the CCA 2008 and Sustainable Development factors.
44. Annex B stated that “Based on current projections, the package of proposals and policies that we can quantify will deliver sufficient quantified savings to meet CB4, significantly overperform for CB5 by 81Mt of savings, and we have quantified 97% of the emissions savings that will enable CB6 to be met”. The conclusion set out in Annex B was that:

“Our overall assessment, taking account of the uncertainty in wider trends and factors, is that the unquantified proposals and policies will enable Carbon Budget 6 to be met when considered alongside the quantified proposals and policies set out in Table 2, Appendix.”

45. With respect to sustainable development, the submission contained a table which stated that “[t]here are both positive and negative capital impacts associated with emissions reductions policies but the overall contribution to sustainable development is likely positive”. The table cross-referred the Secretary of State to the “natural capital” section of Appendix E to the section 13 advice and explained that other aspects of sustainable development were addressed in the sections of Appendix E addressing economic, fiscal and social factors. The introduction to that section stated that:

“Sustainable development concerns the stability and prosperity of society, and its capacity to provide for future generations. Sustainable development also incorporates social, economic, and

environmental dimensions of sustainability. The Climate Change Act requires that the proposals and policies we put in place to enable our carbon budgets to be met, taken as a whole, must be such as to contribute to sustainable development. The main outcomes of the proposals and policies in this report will have a positive impact on the UK's contribution to the global Sustainable Development Goals, in particular goal 7, targeting affordable and clean energy, and goal 13, targeting climate action. In this section, we set out how this package of policies and proposals will contribute to sustainable development. The social considerations section considers the impact on different social groups of climate policies and the net zero transition, and what mitigation the government is putting place, where necessary. The Natural Capital section considers the impact on the continuation and improvement of environmental functions, and stability and renewal of natural assets. This is most relevant to the Sustainable Development Goals 6, 14 and 15, which target protection of water and life on land and marine habitats.”

46. Under the heading “social considerations”, there was reference to energy prices, the transition from fossil fuels, energy consumption and fuel poverty. Under the heading “natural capital”, the text explained that natural capital refers to “those elements of the natural environment which provide valuable goods and services to people”. The text cautioned that further assessment of the implications for natural capital of proposals and policies would be required, but summarised the position as follows:

“This package of proposals and policies is expected to have a significant net benefit to natural capital and thus sustainable development. Moving away from i) fossil fuels towards a greater share of renewable energy, ii) petrol and diesel cars towards lower-emissions alternatives such as electric vehicles iii) gas boilers to lower carbon heating sources and iv) high carbon land uses towards afforestation and other land-based carbon dioxide removals, are just a few examples that will provide significant benefits. However, some negative impacts to some natural capital stocks are likely to arise and impacts will likely be specific and localised. The impact from the significant land use change required to deliver proposals in this report and meet net zero will depend on how and where this change is enacted, with a systemic and spatial approach more likely to deliver on net zero while providing natural capital benefits. Further in-depth appraisal of the natural capital impacts of specific policies and policy mixes will need to be undertaken as proposals are developed following this report. This will be done through the normal channels of Impact Assessments and Business Cases, to ensure trade-offs are managed and impacts mitigated.”

The text went on to address specific issues such as air quality, recreation, biodiversity, floods, the availability of water and water quality, raw materials, rare metals, and land use.

47. Annex B contained three tables: Table 1 (Policies captured in the Energy and Emissions Projections); Table 2 (Quantified proposals and policies); Table 3 (Unquantified proposals and policies). In Table 2, the Power sector proposals and policies were grouped together.
48. During the course of oral argument, I was referred to a number of specific proposals and policies by the parties. One example was number 159 in Table 2 of Annex B. The policy name was “Analyse manure prior to application to match crop requirements”. The policy description was:

“Analysing the nitrogen content of slurry, prior to application on crops and grassland, can improve nutrient management, ensuring nitrogen applications do not exceed crop requirements to minimise emissions of nitrous oxide (N₂O). Increasing industry adoption is expected as part of a market-led take up of precision farming that is already occurring. Government will work with industry to identify the most appropriate mechanisms for change. We expect the Sustainable Farming Incentive (nutrient management standard) to contribute indirectly to this outcome.”

The average annualised savings in CB6 was stated to be 0.00096 Mt CO₂e, and the timescale from which the policy takes effect was 2022. The delivery risks were explained as:

“Delivery risk uncertain. Requires further analysis of actions under SFI [Sustainable Farming Incentive] to help deliver this”.

49. The delivery risks mitigation was described as:
- “Identify whether the actions encouraged under the SFI (particular advisor visits) will partly mitigate delivery risks”.
50. On 29th March 2023, a read-out from the Secretary of State’s private office confirmed that the Secretary of State had fully considered the documents in considerable detail and was happy to confirm his decision.
51. In his witness statement, Mr Thompson discusses RAG ratings, and has sought to explain why they were not provided to the Secretary of State in the March submissions. Mr Wolfe KC, for Friends of the Earth, contended that Mr Thompson’s explanation was not admissible as it amounts to *ex post facto* evidence, contrary to the principle in *R(United Trade Action Group Ltd) v Transport for London* [2021] EWCA Civ 1197, at §125. It was argued that Mr Thompson’s evidence is not consistent with the contemporaneous evidence, and could be self-serving. I disagree.
52. It seems to me what Mr Thompson was seeking to do in his witness statement was to explain why he did not consider it appropriate to provide RAG ratings to the Secretary of State in advance of the March 2023 decision. This was not an *ex post facto* attempt to elaborate upon or elucidate reasons for a decision that was under challenge, which is generally impermissible as the Court of Appeal pointed out in *United Trade Action Group Ltd*. Rather, Mr Thompson was seeking to explain why he took a particular step in circumstances where that approach has been called into question in these

proceedings; he was not seeking to expand or elaborate upon his reasons for a public law decision that was under challenge. Furthermore, it does not seem to me that the explanation given by Mr Thompson is inconsistent with the contemporaneous evidence. Indeed, there is no contemporaneous evidence making it clear that the Secretary of State would be provided with RAG ratings. The contemporaneous evidence shows that RAG ratings were provided to the Secretary of State in November 2022, and at a later point Mr Thompson requested that a narrative explanation of risk should be provided. The contemporaneous evidence does not provide any clues for why the shift was made. To understand why that shift was made, it is entirely appropriate for Mr Thompson to seek to explain the factors involved.

53. In his witness statement, Mr Thompson explained that RAG ratings are a useful tool to convey information to a Secretary of State who is new to a brief or has little or no prior knowledge of the policy area and the complexities and challenges involved. In his view, they are not a useful way of conveying information to a Minister who is more experienced in the area and has a greater grasp of the complexities and challenges. As a result, Mr Thompson explained that it was his view (and that of other senior colleagues within the department) that RAG ratings were not an effective tool for the Secretary of State to have available to him when making an assessment as to whether a package of proposals and policies will enable the carbon budgets to be met, and could be misleading. Mr Thompson stated that:

“RAG ratings necessarily group types of risks that are dissimilar in nature: a policy may be categorised as “red” for a range of reasons, such as because it is at an early stage of development, it relies on public funding in future Spending Reviews, it relies on further research and development, it requires consultation, or it relies on the adoption of a new technology. The Secretary of State might decide, however, that these different types of risk pose very different levels of risk.

The RAG ratings do not take into account of the systemic relationships between different proposals and policies. The RAG ratings provided by Sector Teams do not differentiate between the risk attached to delivery of a specific policy and the wider risk posed to the delivery of emissions savings more generally.

The proposals and policies vary significantly in their scope and complexity. Risk assessments of major infrastructure programmes will usually be a composite of tens of individual risks or more, and aggregating those risks into one summary category of risk is challenging. Other policies may be discrete and are either less complex or involve different types of risk.

The fact that a particular proposal or policy might be given a “red” RAG rating by a Sector Team does not mean that it will not be delivered, or that it will not deliver the emissions savings attributed to it.”

54. Mr Thompson also pointed out that by its very nature a RAG rating (or its equivalent) focuses on the potential negatives relating to a proposal or policy and does not account

for potential positives. In his view, it was important that Ministers consider a package of proposals as a whole, and that includes potential upsides as well as potential downsides. Instead of RAG ratings, Mr Thompson considered that the Secretary of State should be provided with narrative descriptions of delivery risk, together with sectoral summaries of risk.

55. With respect to the contents of the CBDP, Mr Thompson explained that the decision as to the contents of the plan was for the Secretary of State to take. The broad consensus amongst senior officials was to recommend to the Secretary of State that the narrative descriptions of risk to individual policies and proposals should not be included in the CBDP. The reasons for this recommendation were that (i) section 14 of the CCA of 2008 did not impose a legal requirement that descriptions of risk to individual policies and proposals should be included; (ii) to publish assessments of risk to delivery of such a varied range of proposals and policies, particularly those at an early stage of development, may compromise the space that is required to ensure that policy is developed (and risk is identified and addressed) to an appropriate level before it is subjected to public scrutiny. Mr Thompson expressed the view that there was a real risk that Sector Teams would be more guarded in their assessments of risk if they knew that they would be published; publication of an assessment of risk could itself create risk; and the Secretary of State is familiar with the context and will have background information that would not be available to, for example, a member of the public; and (iii) summaries of risk at a sectoral level were a more meaningful and helpful way of conveying risk, as they enable the identification of cross-cutting risks that potentially pose material risks to the emissions savings that the package of proposals and policies are intended to deliver.
56. In his witness statement, Mr Thompson also discussed the Devolved Administrations. In certain areas, in particular agriculture, land use, waste and building sectors, he explained that policy is devolved to the administrations in Wales, Scotland and Northern Ireland. Each of the Devolved Administrations has committed to achieving net zero, and their proposals and policies can contribute to the United Kingdom's emissions savings.
57. The Scottish Government has committed to achieving net zero by 2045 and has set interim binding targets of reductions in emissions of 75% by 2030 and 90% by 2040. The Scottish Government published its latest Climate Change Plan, which covers the period 2018 to 2032, in 2020. This plan covers all sectors of the economy, mirroring those set out in the CBDP, and outlines actions that the Scottish Government intends to take in order to make to meet its targets. They include actions to improve energy efficiency and introduce low carbon heating to buildings, and to restore peatlands, support afforestation and reduce emissions in agriculture.
58. The Welsh Government has committed to achieving net zero by 2050 and to achieving reductions in emissions of 63% by 2030 and of 89% by 2040. It has published *Net Zero Wales*, which is the emissions reduction plan for Wales for CB2, covering the period 2021 to 2025. The plan is cross-economy, and includes actions for the electricity and heat generation sectors, transport, residential buildings, industry, business and agriculture.
59. The Northern Irish Executive has committed to achieving net zero by 2050, with an interim target of at least a 48% net reduction in emissions by 2030. Sectoral targets

have also been set, including targets for 2030 of obtaining at least 80% of electricity consumption from renewable sources. The draft Green Growth Strategy sets out the Northern Ireland's vision for 2050, and a Climate Action Plan is being developed.

60. The specific information provided by the Devolved Administrations was limited. The Welsh Government shared what had already been published in *Net Zero Wales*. The Welsh Government was due to begin work to develop proposals and policies for the period 2025 to 2030. The Northern Irish Department of Agriculture provided information relating to 48 different proposals and policies, with a brief description of each of these and further information on the relevant sector and implementation status. The Scottish Government provided information relating to 228 “key emissions-reducing policies”.
61. Mr Thompson acknowledged that the responses provided by the Devolved Administrations did not provide much detail. There was no quantification of projected emissions savings attributable to their proposals or policies. This was not unexpected as there was much less data of that kind available at the devolved level. Nevertheless, as the Devolved Administrations had committed to taking action to achieve net zero, it was considered that they would need to take further action to meet their commitments. It was decided that the best way of taking this into account was to “scale up” the emissions savings that would be delivered in the relevant areas. Mr Thompson considered that it was reasonable to use this approach, based on the assumption that the proposals and policies would have similar effects to those adopted by the United Kingdom government, that similar levels of uptake would be achieved and the emissions savings results would be similar. In total, 58 proposals and policies were scaled to provide an estimate for United Kingdom-wide emissions savings: about 5% of the total emissions savings. Mr Thompson considered that this was a conservative approach, as there were some sectors where no scaling was undertaken, and also the Devolved Administrations might also take action which achieves greater emissions savings than reflected in the scaling. In the final presentation of materials to the Secretary of State, the scaled contributions in the agriculture and land use, land use change and forestry sector and the waste sector were presented separately as quantified proposals and policies.
62. In a witness statement for the present proceedings, Paul Bailey, the Deputy Director for Strategic Energy and Climate Analysis in the Department for Energy Security and Net Zero has sought to explain the modelling process that was undertaken. He states that the modelled emissions savings represent their “best estimate” of the real-world outcomes and associated emissions savings that would be achieved by the proposals and policies. Where policies are in development, or still to be developed, modelling shows the emission savings that could be achieved with suitable policy action. Mr Bailey explained the reasons why proposals and policies – of which there were 143 – were unquantified: they may deliver indirect emission savings, via changes in social behaviour or technology uptake; analysis has not been completed in time and so could not be modelled; the evidence-base is not strong enough to estimate resulting emission savings robustly; and they include measures that do not lead to individual abatement but are integral to the delivery of quantified proposals and policies (referred to as “enablers”).
63. Friends of the Earth, one of the Claimants, has produced for these proceedings an analysis of the risk tables that had been provided to the Secretary of State as an annex

to the submission (this is set out in the witness statement of Michael Childs, the Head of Science, Policy and Research). It is pointed out that 60 of the 191 quantified proposals and policies are expressed to be “uncertain”; and this represents at least 766 Mt CO₂e, or 47% of the total CB4-6 savings. For 65 of the 191 quantified proposals and policies, whilst information is included on delivery risks, contingencies, dependencies, barriers or similar, no information is included on either the degree of delivery risk (high/low) or on the confidence of the assessment (certain/uncertain). This represents at least 683 Mt CO₂e, or 42% of the total CB4-6 savings. For 25 of the 191 quantified proposals and policies, no information is included on either what the delivery risks there may be, or on the degree of delivery risk. This represents 27 Mt CO₂e, 2% of the total CB4-6 savings.

64. The delivery risks for 6 of the 191 policies are expressed as being significant, high or challenging. Total CB4-6 savings from these policies are calculated at to be least 18 Mt CO₂e (approximately 1% of the total). For the remaining 35 of the 191 policies, the delivery risks are expressed in terms of having high confidence or certainty. Total CB4-6 savings from these policies are calculated to be at least 135 Mt CO₂e (approximately 8% of the total).
65. Lord Deben, a former Secretary of State for the Environment, and the Chairman of the Climate Change Committee (“the CCC”) from 2012 to 2023, has provided a witness statement on behalf of Friends of the Earth. Lord Deben explained that the CCC’s Progress Report to Parliament was published on 28th June 2023. This report concluded that the CCC was even less convinced that the Government had a programme that would enable net zero to be achieved by 2050 than it had been previously. Whereas previously it had been possible for the CCC to give certain plans and proposals in the Net Zero Strategy the benefit of the doubt, this could not be done for the CBDP. The greater detail of the CBDP had removed possibilities that more general language had included.
66. Lord Deben explained that the government’s programme for achieving net zero depends on assumptions, none of which can ever be 100% safe. However, the first assumption in the CBDP is that everything will go exactly as planned, and no contingency had been built in. The CBDP depends upon significant improvements in technology being realised, and yet it is not right to assume that such improvements will always be achieved within the necessary timeframe for achieving net zero targets or indeed achieved at all. Lord Deben also pointed out that there is also very little said about the timing for the delivery of policies, or how they will be achieved. This is important because there has been a history of significant delays in delivery.
67. Lord Deben commented on the absence of RAG ratings for each proposal and policy. He said that this was “surprising to me. Had the Secretary of State been provided with this information it is quite clear to me that he could not have formed a view that the policies and proposals will enable the statutory targets to be met when that depended on all policies and proposals being delivered in full - it being clear that the DEFRA itself had no confidence in that conclusion.”
68. On 30th March 2023, the Secretary of State laid the CBDP before Parliament. The CBDP stated that it was being published to inform Parliament and the public of the Government’s proposals and policies to enable carbon budgets to be met. The CBDP set out the policies captured in the EEP; it listed the various ‘Quantified proposals and policies’, and identified the emissions savings that they were each predicted to make,

and the timescale from which the policy would take effect; and it also set out the ‘Unquantified proposals and policies’ that were expected to deliver further emissions savings. The CBDP also provided “Sectoral summaries of delivery confidence”: this set out the “Risks and mitigation” for each of the sectors. The CBDP was accompanied by a Technical Annex, which provided an overview of the methodological approach taken to the analysis in the CBDP.

The Climate Change Act 2008

69. The statutory framework is set out in considerable detail in *FoE (No. 1)* at §§28-55, and I agree with Holgate J’s lucid exposition of the structure of the legislation. In the instant case, of especial relevance are sections 13 and 14 of the CCA 2008, which I set out in full.

70. Section 13 of the CCA provides that:

“(1) The Secretary of State must prepare such proposals and policies as the Secretary of State considers will enable the carbon budgets that have been set under this Act to be met.

(2) The proposals and policies must be prepared with a view to meeting—

(a) the target in section 1 (the target for 2050), and

(b) any target set under section 5(1)(c) (power to set targets for later years).

(3) The proposals and policies, taken as a whole, must be such as to contribute to sustainable development.

(4) In preparing the proposals and policies, the Secretary of State may take into account the proposals and policies the Secretary of State considers may be prepared by other national authorities.”

Section 14 provides that:

“(1) As soon as is reasonably practicable after making an order setting the carbon budget for a budgetary period, the Secretary of State must lay before Parliament a report setting out proposals and policies for meeting the carbon budgets for the current and future budgetary periods up to and including that period.

(2) The report must, in particular, set out—

(a) the Secretary of State's current proposals and policies under section 13, and

(b) the time-scales over which those proposals and policies are expected to take effect.

(3) The report must explain how the proposals and policies set out in the report affect different sectors of the economy.

(4) The report must outline the implications of the proposals and policies as regards the crediting of carbon units to the net UK carbon account for each budgetary period covered by the report.

(5) So far as the report relates to proposals and policies of the Scottish Ministers, the Welsh Ministers or a Northern Ireland department, it must be prepared in consultation with that authority.

(6) The Secretary of State must send a copy of the report to those authorities.”

71. It is also important for the present proceedings to note that the role of the CCC is set out at Part 2 of the CCA 2008. This includes laying before Parliament an annual report setting out its views on the progress made towards meeting carbon budgets, and whether these budgets and target are likely to be met: section 36(2). The Secretary of State is obliged to respond to the CCC’s report annually: section 37.

The case law

72. Of considerable relevance to these proceedings is Holgate J’s judgment in *FoE (No. 1)*. Both the Claimants and the Defendant relied on aspects of Holgate J’s judgment to support their arguments. It is therefore necessary for me to set out Holgate J’s analysis in some detail.
73. The case involved a challenge to the way in which the Secretary of State exercised his functions under sections 13 and 14 of the CCA 2008. It was contended that (i) the Secretary of State was not entitled to conclude under section 13 that the proposals and policies in the NZS would enable the carbon budget for CB6 (2033-37) to be met where the quantified effects of those policies were estimated to deliver only 95% of the emissions reductions required to meet that budget; (ii) the Secretary of State had failed to take into account relevant considerations which were obviously material to his decision under section 13, namely the risk to the delivery of individual proposals and policies and to the achievement of the carbon budgets; (iii) the Secretary of State had failed to include in the NZS the information legally required to discharge his reporting obligations under section 14, and it was not sufficient for him to merely tell Parliament what the proposals and policies were. Holgate J agreed with the Claimants on points (ii) and (iii), but rejected point (i).
74. With respect to point (i), Holgate J held at §§177 and 193 that section 13(1) of the CCA 2008 did not require the Secretary of State to be satisfied that the quantifiable effects of his proposals and policies will enable the whole of the emissions reductions required by the carbon budgets to be met; the shortfall could be made up by unquantified policies. The first Claimant in these proceedings takes issue with this holding, and reserves the right to argue the point on another occasion.
75. In arriving at his finding on point (i) Holgate J made some important observations about the obligation under section 13. Holgate J noted a number of matters that were agreed

between the parties, including (at §167) that it was a matter of judgment for the Secretary of State to decide on the proposals and policies which should be prepared, and whether they will enable the carbon budgets to be met. Holgate J noted at §178 that the targets are quantitative in nature, and that section 13(1) involved the Secretary of State “making a predictive assessment many years into the future. Such predictions inevitably involve significant uncertainty, for example, in relation to future circumstances falling within section 10(2). There are uncertainties about economic growth, energy, prices, population growth, the impact of investment in technological innovation and the implementation of proposals. Even predictions expressed in quantitative terms involve subjective judgment”. At §180, Holgate J explained that the exercise to be carried out “involves predictions of future conditions over many years in a changing socio-economic, environmental and technological landscape and therefore a good deal of uncertainty. The consideration of matters such as these depends upon the use of judgment, whether the analysis is quantitative or qualitative”.

76. Holgate J acknowledged at §181 that to carry out “predictive, quantitative analysis”, the Secretary of State’s officials had to use a number of mathematical models, and the Courts had accepted that the use of such models involves expert judgment, and “decisions based on scientific, technical and predictive assessments should be afforded an enhanced margin of appreciation in judicial review”, referring to *R (Mott) v Environment Agency* [2016] 1 WLR 4338, *Spurrier* [2020] PTSR 240 at §§176-[179]; and *R (Plan B Earth) v Secretary of State for Transport* [2020] PTSR 1446 at §68 and §177.
77. Holgate J stated at §183 that the Secretary of State’s decisions under section 13(1) on the preparation of proposals and policies were matters of judgment, which will be informed, but not circumscribed, by the quantitative analysis carried out. At §185, Holgate J commented that the greater the shortfall between the quantified effects and the emissions target, the more cogent the qualitative analysis would need to be.
78. With respect to point (ii), the legal sufficiency of the briefing to the Secretary of State, Holgate J stated at §195 that the nature and extent of the work that needed to be carried out to make the predictive assessment was a matter of judgment for the Secretary of State and his officials, subject to *Wednesbury* review. The approach that should be taken by the Court in carrying out that review needed to bear in mind a number of propositions:

“198 A minister only takes into account matters of which he has personal knowledge or which are drawn to his attention in briefing material. He is not deemed to know everything of which his officials are aware. But a minister cannot be expected to read for himself all the material in his department relevant to the matter. It is reasonable for him to rely upon briefing material. Part of the function of officials is to prepare an analysis, evaluation and precis of material to which the minister is either legally obliged to have regard, or to which he may wish to have regard.

199 But it is only if the briefing omits something which a minister was legally obliged to take into account, and which was not insignificant, that he will have failed to take it into account a

material consideration, so that his decision was unlawful. The test is whether the legislation mandated, expressly or by implication, that the consideration be taken into account, or whether the consideration was so “obviously material” that it was irrational not to have taken it into account. . . . In this regard, it is necessary to consider the nature, scope and purpose of the legislation in question”.

79. Holgate J analysed the legislation at §202:

“(i) Section 1 of the CCA 2008 was amended to incorporate the net zero target because of the recognition internationally and in the UK of the need for action to be taken to reduce GHG emissions more urgently;

(ii) The UK's contribution to addressing the global temperature target in the Paris Agreement depends critically on meeting the net zero target for 2050 set by the CCA 2008 through the carbon budgets;

(iii) The Secretary of State is responsible for setting the carbon budgets:

(iv) The CCA 2008 imposes the obligation to ensure that the net UK carbon account meets those targets solely on the Secretary of State;

(v) Under the CCA 2008 the preparation of proposals and policies under s.13 (and if necessary under s.19(1)) is critical to achieving those targets;

(vi) The Act imposes solely on the Secretary of State the obligations to prepare such measures and to be satisfied that they will enable the carbon budgets to be met. There is no requirement for Parliament or the public to be consulted on those proposals and policies or for Parliament to approve them;

(vii) The Secretary of State cannot properly and rationally be satisfied that his proposals and policies will enable the carbon budgets to be met without quantitative analysis to predict the effects of those proposals and policies in reducing GHG emissions ([176] above);

(viii) The predictive quantitative assessment and any qualitative assessment put before the Secretary of State are essential to his decision on whether his proposals and policies will enable targets to be met which are expressed solely in numerical terms;

(ix) Although a quantitative assessment does not have to show that quantifiable policies can deliver the whole of the emissions reductions required by the targets, any qualitative judgment or

assessment to address that shortfall will have to demonstrate to the Secretary of State how the quantitative targets can be met;

(x) The carbon budgets and the 2050 target relate to the whole of the UK economy and society and not to sectors. Achievement of those targets requires a multiplicity of policy measures addressing the UK as a whole, individual sectors, and factors falling within s.10(2). Those measures will be operative at different points in time. Some will apply in isolation and others in combination. Whether an overall strategy will enable the statutory targets to be met depends upon the contribution which each policy (or interrelated groups of policies) is predicted to make to the cumulative achievement of those targets;

(xi) The merits of individual measures, their contributions and their deliverability, together with the deliverability of the reductions in GHG emissions required by s.1(1) and s.4(1), are all essential considerations for the Secretary of State, or the Minister in his place”.

80. At §204, Holgate J found that “one obviously material consideration which the Secretary of State must take into account is risk to the delivery of individual proposals and policies and to the achievement of the carbon budgets and the 2050 net zero target. This is necessarily implicit in the statutory scheme. In turn, this must depend upon the relative contributions made by individual measures to achieving those targets”. That had not been provided to the Secretary of State, even though it was available within the Department.

81. The same point was also made at §211:

“Viewed in the context of the statutory scheme, I have no doubt that the quantification of the effect of individual policies was an obviously material consideration on which, as a matter of law, information had to be provided to the minister, so that he could discharge his functions under section 13 lawfully by taking it into account. The defendant’s role in approving a package of policies so as to enable the statutory targets to be met is critical to the operation of the CCA 2008. Risk to the delivery of individual policies and of the targets is “obviously material””.

82. Holgate J held at §213 that “without information on the contributions by individual policies to the 95% assessment, the minister could not rationally decide for himself how much weight to give to those matters and to the quantitative assessment in order to discharge his obligation under section 13(1)”. This was explained in more detail at §214:

“The briefing to the minister did not enable him to appreciate the extent to which individual policies, which might be subject to significant uncertainty in terms of content, timing or effect, were nonetheless assumed to contribute to the 95% cumulative figure. This concern is all the more serious because the minister was told

that that the assessment by BEIS was based upon the assumption that the quantified policies would be “delivered in full”. The information which ought to have been provided to the defendant would have influenced his assessment of the merits of particular measures. It was crucial so that he could question whether, for example, the strategy he was being advised to adopt was overly dependent on particular policies, or whether further work needed to be carried out to address uncertainty, or whether the overall figure of 95% was robust or too high. If it was too high, then that would affect the size of the shortfall and his qualitative judgment as to whether unquantified policies could be relied upon to make up that gap with what he would judge to be an appropriate level of confidence. Information on the numerical contribution made by individual policies was therefore legally essential to enable the defendant to discharge his obligation under section 13(1) by considering the all important issue of risk to delivery. These were matters for the Secretary of State and not simply his officials.”

83. Holgate J went on to find that there was further information about the 5% shortfall which should have been provided to the Secretary of State by his officials, as this was “obviously material” (§§216-7). As for the claimants’ contention about information relating to the time scales over which the proposals and policies were expected to take effect, Holgate J held at §218 that it was a matter of judgment as to how much of this material needed to be included in the ministerial submission.
84. With respect to point (iii), whether or not the section 14 duty was complied with, Holgate J rejected the Secretary of State’s submission that the duty to “set out” his proposals and policies amounted to little more than a requirement to publish those measures. Holgate J held at §233 that the Secretary of State was required “to explain the thinking behind the proposals and how they will enable the carbon budgets to be met”. This requires a “quantitative explanation” being provided to Parliament (§235), although the Court accepted the Secretary of State’s contention that “the legislation does not require the department’s detailed workings or the modelling to be provided to Parliament”.
85. Holgate J’s reasoning was based in part on the “statutory objective of transparency”. At §241, Holgate J explained:

“Because the reports under sections 14, 19, 36 and 37 are required to be laid before Parliament, they will be published. The requirement is not simply to provide unpublished reports to, for example, a regulatory body. The statutory objective of transparency in how the targets are to be met extends beyond Parliament, to local authorities and other statutory authorities, NGOs, businesses and the general public. That transparency requires reports under section 14 to contain explanation and quantification. The purpose of a such a report is not limited to telling Parliament what the Secretary of State’s proposals and policies are”.

86. In considering whether the Secretary of State had complied with section 14 of the CCA 2008, Holgate J held at §245 that the adequacy of the report should not be “materially lower than that of a report issued for public consultation . . . In both instances, the legal object of the reports is to enable its readers to understand and assess the adequacy of the Government’s policy proposals and their effects. Furthermore, a report under section 14 is also required in the interests of public transparency”. This position was supported by the reasoning of the Supreme Court of Ireland in *Friends of the Irish Environment v Government of Ireland* [2020] IESC 49, where the Court considered the obligation of the Irish Government under section 4 of the Climate Action and Low Carbon Development Act 2015.

87. Holgate J held that the NZS was not compliant with section 14 of the CCA 2008 because it did not look at the contributions to emissions reductions made by individual policies, or interacting policies, where these were assessed as quantifiable (§252). Other matters which were “obviously material” to the critical issue of risk to the delivery of the statutory targets, and which the Secretary of State was obliged to inform Parliament under section 14 were explanations:

“(i) that the quantitative analysis carried out by BEIS (which related solely to quantifiable policies with a direct effect on emissions) predicted that those policies would achieve 95%, not 100%, of the reductions required for CB6, and had assumed “delivery in full” of those policies; ”

(ii) how it was judged that that 5% shortfall would be made up (see also para 216 above), including the judgment based upon comparing the 95% result with the projections of the implied performance of the delivery pathway;

(iii) that tables 6—8 did not present the outcome of the department’s quantitative analysis of emissions reductions predicted to result from NZS policies;

(iv) how that quantitative analysis differed from the modelling of the delivery pathway”.

(§§253-4).

88. At §256, Holgate J stated that it was the responsibility of the Secretary of State, and not his officials, to lay the report before Parliament; and the adequacy of the report was a matter for him, acting on the advice of his officials and with legally sufficient briefing. At §257, Holgate J concluded that:

“A clearly presented report would not lead a reader to misunderstand predictions of the effects of each policy as “targets”, or to fail to appreciate the uncertainties involved. Similarly, there is no reason why it could not be made clear to a reader that policies are at various stages of development and that current predictions should not be taken to undermine the need for future flexibility to respond to changes in circumstance. Indeed, these points are clearly explained in the NZS. Problems

in publishing details of quantitative analysis of the effects of policies yet to be “fully developed” may raise matters of judgment for the defendant as to how much detail should be included in a report. But that cannot affect the legal principle that contributions from individual policies which are properly quantifiable must be addressed in the report. Here, they were not at all.”

89. Holgate J’s exposition of the section 13 duty was approved by the Court of Appeal in *R (Global Feedback Ltd) v Secretary of State for Environment, Food and Rural Affairs* [2023] EWCA Civ 1549 at §79. The Court of Appeal also held that section 13 involved a “strategic” and a “whole-economy”, or “economy-wide”, judgment to be applied by the Secretary of State. It was also a “continuing” duty.
90. The Court of Appeal explained at §83 that the Secretary of State for Energy Security and Net Zero was “uniquely well placed to discharge the duty in section 13. He has an overview of the whole economy, is conscious of the likely levels of greenhouse gas emissions in all sectors of it for the budgetary period or periods in question, and is able to judge the potential for appropriate action to ensure the meeting of carbon budgets”.
91. In *Global Feedback*, the Court of Appeal considered the relationship between the Secretary of State and the CCC, and in particular the extent to which the Secretary of State had to have regard to the advice of the CCC in relation to diet and climate change, as part of his section 13 obligations. The Court of Appeal held at §112 that in exercising his functions under section 13 of the CCA 2008, the Secretary of State was not under a duty to take the CCC’s advice into account, let alone give it significant weight or to follow it unless there are cogent reasons for departing from it. In reaching this conclusion, the Court of Appeal observed at §114 that it was “telling” that Parliament had chosen not to impose an express duty on the Secretary of State to obtain or take into account the CCC’s advice.

Grounds of Challenge

92. A compendious summary of the Grounds of Claim was described by the Secretary of State in his skeleton argument for these proceedings as follows:
93. Ground 1: The Secretary of State failed to take into account mandatory material considerations when purporting to comply with section 13 of the CCA 2008;
Ground 2: The Secretary of State proceeded on the basis of an assumption that all of the quantified proposals and policies would be delivered in full, and this assumption was not supported by the information as to risk to delivery with which the Secretary of State was provided;
Ground 3: The Secretary of State’s conclusion that the proposals and policies will enable the carbon budgets to be met was irrational;
Ground 4: The Secretary of State applied the wrong legal test to section 13(3) of the CCA 2008 (“sustainable development”);

Ground 5: The Secretary of State failed to include in the CBDP information that he was required to include.

94. In oral argument, the Claimants argued grounds 2 and 3 together on the basis that there was considerable overlap between the two. As the arguments were presented to me, it seemed to me that there was considerable overlap with ground 1 as well. In this judgment, therefore, I shall set out the arguments with respect to ground 1, and then grounds 2 and 3, and then set out my judgment with respect to the three grounds. I will then set out the arguments on ground 4, followed by my judgment on that ground; and finally, will set out the arguments on ground 5, followed by my judgment on that ground.

Ground 1: *The failure to take into account mandatory material considerations when purporting to comply with section 13 of the CCA 2008*

The parties' arguments

95. Mr Wolfe KC and Ms Simor KC contend that the Secretary of State was not provided with, and so failed to take into account, key materials on the risk to the delivery of individual policies and proposals set out in the CBDP. They also argue that the officials within the Department for Energy, Security and Net Zero misrepresented the extent of these risks in the briefing materials they provided to the Secretary of State.
96. Mr Wolfe KC's essential contention was that the Secretary of State should have been provided with RAG ratings for each of the proposals and policies, or something which faithfully reflected the information that the RAG ratings would have contained. He makes three main arguments. First, he contends that the Risk Narratives that were provided to the Secretary of State did not provide him with mandatory material about the risk to delivery of each policy. As a result, the Secretary of State failed to consider this mandatory material about the delivery risk associated with each policy when approving the CBDP. Second, he submits that the information about the delivery risks in the Risk Narratives provided to the Secretary of State did not fairly and accurately summarise the information about delivery risks provided by other departments. Third, he argues that the briefing to the Secretary of State was deficient because it provided "no information" about the delivery risk to the Devolved Administration's policies and proposals as part of his briefing for CB6.
97. The focus of Ms Simor KC's arguments was that the Secretary of State was not provided with mandatory information *quantifying* the delivery risk for CB6, either on an individual policy level or taking CB6 as a whole. She makes five key arguments. First, that the quantification of emissions reductions forecast in CB6 should have been adjusted to reflect that some of these policies were unlikely to be delivered or achieved in full. This would have allowed the Secretary of State to appreciate the (significant) uncertainty associated with certain policies. Second, that the Secretary of State should have been provided with material summarising the cumulative risk to delivery across the policies and proposals. Without this information, he could not have reasonably understood the very significant extent of that risk. Third, that the Secretary of State was not given sufficient information in the Risk Narratives (or otherwise) about the risk to delivery in relation to individual policies and proposals that were described as having "uncertain delivery risk" but that had been rated as "low" or "very low" confidence in the RAG ratings. Fourth, that there were quantification errors in modelling the projected

emission reductions from ‘non-EEP’ policies and proposals. Fifth, that the Department erred by including some of the EEP policies and proposals in the high confidence CBDP baseline, when these policies and proposals had in fact been identified as having low delivery confidence. These errors meant the Secretary of State’s understanding was that he could be confident in delivering the emissions reductions needed to meet CB6, which was wrong.

98. For the Secretary of State, Mr Moffett KC contended that the Claimants are operating under the false premise that the RAG ratings are the reliable, definitive description of delivery risks for each policy. He argued that the Risk Narratives, and not the RAG ratings, should be treated as the most reliable description of risks. He emphasises that the Risk Narratives were produced with input from the Sector Leads, who are those best equipped to assess the delivery risk associated with each policy: the RAG ratings were produced by the Sector Teams and not the Sector Leads. Mr Moffett KC submits that the RAG ratings do not always include an accurate description of the delivery risk for each policy. It is the Risk Narratives which summarise the delivery risks fairly and accurately, and it was justifiable (and not misleading) that the Secretary of State was presented with these narratives and not the RAG ratings in his March 2023 briefing materials.
99. Addressing Mr Wolfe KC’s argument that the Secretary of State was not provided with mandatory material about risk to delivery from each of the departments, Mr Moffett KC submits that this argument must fail because Friends of the Earth have failed to show: (i) that officials took an irrational approach to the information provided to the Secretary of State; Mr Thompson’s witness statement shows that the approach taken was rational; (ii) that the Secretary of State could not make a strategic and whole economy judgment in relation to the CBDP on the basis of the information that was available to him.
100. In response to Mr Wolfe KC’s argument that Secretary of State was not provided with information on delivery risks for policies from the Devolved Administrations, Mr Moffett KC acknowledges that there was a lack of information about the policies and proposals pursued by the Devolved Administrations generally. Nevertheless, the Department proceeded on the basis that the Devolved Administrations would prepare policies and proposals that were materially similar to those pursued in England (an approach the Claimants do not challenge). Given this approach, it was realistic to assume that the substantive risks to delivery of the policies and proposals were similar for the Devolved Administrations as for England. There were no deficiencies in the information provided to the Secretary of State, who was informed that:
- “[The Department’s] understanding of DA-specific risks is limited. However we understand that many of the risks to delivery of emissions savings will be common across all four Nations.”
101. Responding to Ms Simor KC’s first and second arguments that adjustments should have been made to the quantification of emissions savings for each policy to reflect delivery risk and that the Secretary of State should have been presented with cumulative delivery risk, Mr Moffett KC says that this is no more than a disagreement about how information was presented to the Secretary of State. He submits that ClientEarth have

failed to show that the Department acted irrationally by not presenting the information as Ms Simor KC proposes.

102. Mr Moffett KC also argues that there is no evidence to support ClientEarth's submission that red or red-amber RAG ratings for delivery were inaccurately described as policies for which delivery was "uncertain" in the Risk Narratives. Central to his arguments on this issue is his submission that RAG ratings should not be treated as the definitive assessment of risk. Mr Moffett KC also argues that the central question for the Court is rationality: in his submission, the Court cannot find that the approach of allowing the Sector Leads to draft the Risk Narratives is irrational.
103. As to ClientEarth's argument that the Department's modelling of emissions savings for each non-EEP policy or proposal was deficient as it was based on maximum technical potential, Mr Moffett KC submits that this is not a complaint about the information provided to the Secretary of State about the delivery risk but instead a complaint about the Department's modelling choices. He identifies that Holgate J's prior judgment found there was "*nothing objectionable*" in modelling based on theoretical potential (§77).
104. As to ClientEarth's argument that the Secretary of State was not notified that certain EEP policies had low delivery confidence, Mr Moffett KC submits that such uncertainties were taken into account when modelling the EEP baseline. Reference is specifically made to the explanation of the modelling approach in the Technical Annex to the CBDP, which explains: "*In our approach to modelling the assumptions we need to make, we have taken, on balance, a conservative approach to err on the side of caution, with the effect of either increasing the size of emissions savings required (as discussed above on the baseline) or of reducing the potential effectiveness of policies (for example by assuming slower take-up of technologies than recent evidence suggests)*".

Ground 2: *When taking the Decision under section 13(1), the Secretary of State proceeded on the basis of an assumption that all of the quantified proposals and policies would be delivered in full, and this assumption was not supported by the information as risk to delivery with which the Secretary of State was provided.*

Ground 3: *The Secretary of State's conclusion that the proposals and policies will enable the carbon budgets to be met was irrational.*

The parties' arguments

105. Mr Wolfe KC and Ms Simor KC argued that the Secretary of State expressly approved the CBDP on the assumption that all of the quantified policies and proposals relating to emissions savings would be delivered in full. They highlight the following paragraph which was included at paragraph 26 of the CBDP:

"26. The calculated savings assume the package of proposals and policies are delivered in full. We consider it is reasonable to expect this level of ambition – having regard to delivery risks and the wider context, which give rise to both downside and upside risks (see further information on delivery risks below)."

106. Friends of the Earth and ClientEarth say that it was not open to the Secretary of State to make this assumption when approving the CBDP, based on the information available to the Secretary of State about the delivery risk.
107. Ms Simor KC seeks to rely on evidence from Mr Eames which shows that 90% of the emissions savings attributable to quantified policies were described in the Risk Narratives available to the Secretary of State as having “uncertain” or “high” delivery risk. Mr Wolfe KC highlights that the Department had available further information which highlighted the substantial risk to the delivery of individual policies, including:
- i) advice from DEFRA that the emissions savings projections it had provided “*by and large represent maximum feasible savings rather than a likely scenario*”;
 - ii) the fact that in November 2022 there was a concern that emissions savings achievable from quantifiable policies and proposals could slip to 85% of those required to reach CB6, but that the CBDP was signed off in March 2023 on the basis that the emissions savings it could achieve would be 97% of those required to reach CB6, despite there being no evidence for the increase in confidence in delivery; and
 - iii) broader criticism from Lord Deben over a plan as significant as the CBDP being made on the basis of everything going smoothly, which Lord Deben describes as an “unsatisfactory” assumption.
108. In Mr Wolfe KC’s submission, in the light of the degree of delivery risk associated with the policies and proposals relied upon to enable the carbon budgets to be met, the information provided to the Secretary of State did not provide a proper basis to conclude that all proposals and policies would be delivered in full. It was irrational for the Secretary of State to approve the plan based on this assumption.
109. If, in the alternative, the Secretary of State was not advised to assume that all policies and proposals would be delivered in full, Mr Wolfe KC submits that there would have been an even greater shortfall in the quantified effects of the proposed policies and a sufficiently cogent analysis would be required to demonstrate how this shortfall would be met. Nothing in the advice provided to the Secretary of State explained the basis on which he could conclude that the proposals and policies will enable the carbon budgets to be met if the proposals and policies are not delivered in full.
110. Ms Simor KC submits that that the conclusion that the policies and proposals would be delivered in full was not reasonably open to the Secretary of State having regard to (i) the level of risk and uncertainty assessed by her own officials; (ii) the expert analysis of the CCC in relation to CB6 and the NZS 2022; (iii) the scale and nature of the challenge of meeting CB6; and (iv) the levels of emissions savings to be delivered by EEP ready policies and proposals, compared to previous plans, and the fact that these too involved risks.
111. Ms Simor KC additionally identifies that the Secretary of State (through his Department) was presented with material stating that he could be confident that at best only 10% of the emissions reductions projected to derive from the non-EEP policies would be delivered. This showed a real risk of the CBDP under delivering in terms of emission reduction requirements. In these circumstances there was, in Ms Simor KC’s

submission, no rational basis for the Secretary of State's conclusion that the "package of proposals and policies" would be "delivered in full".

112. As to the intensity of review that would be appropriate, Friends of the Earth and ClientEarth submit that it would be appropriate for the Court to scrutinise the Secretary of State's decision closely on the basis that climate change affects us all and requires us all to take action. It was noted that there was no precedent for the application of a higher degree of scrutiny in climate change cases. However, it was submitted that this was due to the relatively limited climate change litigation to date, and not because an enhanced standard of review should not apply.
113. Mr Moffett KC does not dispute that the Secretary of State (and his Department) could not assume that each and every policy and proposal would be delivered in full. However, relying on evidence from Mr Thompson, he argues that this is not the meaning of the text at paragraph 26 of the CBDP. He explains that this wording was intended to "*make the point that the total volume of quantified emissions savings (i.e. those projected to be achieved by the quantified P&Ps) had been calculated on the basis that the package of proposals and policies would be delivered in full, i.e. the total figure represented the sum of all of the individual quantified emissions savings*". Mr Moffett KC argues that this explanation is consistent with advice given to the Secretary of State, which expressly and repeatedly reiterated that delivery of individual policies and proposals carried risk. For example, he highlights that paragraph 15 of the CBDP explains: "*it is very likely that some proposals or policies will outperform expectations...Meanwhile, some other policies or proposals will under deliver compared to expectations*". Mr Moffett KC argues that these materials show that the Secretary of State cannot have based his decision on an assumption that every policy and proposal is delivered in full, and that this element of the case of Friends of the Earth and ClientEarth should fall away.
114. Mr Moffett KC argues that the Secretary of State did not act irrationally by assuming that the package of policies and proposals was sufficient to meet CB6. Mr Moffett KC submits that the Court cannot rely on Mr Eames' witness statement to make findings of fact because: (i) Mr Eames is an in-house solicitor who works for ClientEarth, and the statement should be treated as an assertion of his subjective opinion; and (ii) Mr Eames has adopted a narrow approach to assessing risk by reference to only some of the briefing materials that were before the Secretary of State.
115. Mr Moffett KC further argues that, even if the Court were to proceed on the basis that Mr Eames' statement was fact, that is insufficient to make out irrationality. Friends of the Earth and ClientEarth would need to meet an extremely high hurdle to show that the decision was irrational: given the decision involves a predictive judgment, on a strategic, whole economy issue reaching many years into the future that involves an assessment based on expert advice of social, economic and environmental and technological factors. Mr Moffett KC did not consider it appropriate for the Court to apply a different standard of review because the case relates to climate change: this is, in his submission, a classic example of a case in which the Court should apply only a low intensity of review.

Discussion

Grounds 1-3: The Secretary of State's decision pursuant to section 13(1) of the CCA 2008

116. It was common ground between the parties that, as Holgate J had held at §204 of his judgment in *FoE (No. 1)*, “one obviously material consideration which the Secretary of State must take into account is risk to the delivery of individual proposals and policies and to the achievement of the carbon budgets and the 2050 net zero target.” Much of the argument (in writing through the skeleton arguments, and orally in the hearing before me) involved consideration of the way in which risk material was presented and the extent to which it was, or was not, sufficient for the Secretary of State to take a lawful decision under section 13.
117. There is no statutorily prescribed way in which the information about risk needs to be provided to the Secretary of State. There is also no free-standing obligation in public law that information about risk has to be presented in a particular way. Officials were not obliged, therefore, to provide the Secretary of State with information about risk by using RAG ratings, or by some other illustrative form. How the risk information should have been presented to the Secretary of State was plainly a matter for the officials, and could only be impugned by this Court if the content of what was provided to the Secretary of State did not enable him to carry out the statutory evaluation exercise lawfully. That would have been the case if, for instance, the information was misleading in that it did not reflect the real risk that officials had identified with respect to a specific proposal or policy, or if the information was incomplete in a material way.
118. The information about risk was presented to the Secretary of State in the narrative of the March 2023 submissions, with the detail of the risk to individual proposals and policies as well as at a sectoral level contained in Annex B to the submissions. In the submissions, the Secretary of State was told with respect to the “Quantified savings to meet Carbon Budgets” that “Based on current projections, our view is that the package of proposals and policies that we can quantify will deliver sufficient quantified savings to meet . . . 97% of CB6. . . . The Technical Annex (Annex D) sets out the methodology for the quantification of policies and proposals. You should note that this quantification relies on the package of proposals and Policies being delivered in full. Our advice is that it is reasonable to expect this level of ambition – having regard to delivery risk (see Annex B) and the wider context.”
- (Emphasis in the original).
119. There is a dispute between the parties as to what the underlined text meant and, therefore, what the Secretary of State was being told by his officials. Mr Moffett KC argued that the Secretary of State could not assume from this statement that each and every policy and proposal would be delivered in full. This argument was supported by the evidence of Mr Thompson, who has explained in his witness statement that that was not the intention of those drafting the submissions. On the other hand, the Claimants contend that this construction does not reflect the wording used in the submissions and the reasonable understanding that the Secretary of State would have had. I agree with the Claimants.
120. It seems to me that the reasonable interpretation of the underlined text, and therefore what the Secretary of State was being told by his officials, was that **each** of the

individual proposals and policies that form the package of measures would be delivered in full. There was no evidence before the Court to indicate that the Secretary of State interpreted the underlined text in the way suggested by Mr Thompson rather than on the basis of the reasonable interpretation of the meaning of the underlined text.

121. If it was intended for the underlined text to mean that not all of the proposals and policies would be delivered in full, then the sentence does not make sense: the package is made up of the sum of its parts, and so if the package was expected to be delivered in full, this would necessarily mean that each of the package's constituent parts would be delivered in full. There is no indication from the first sentence of the underlined text that some of the proposals and policies might not happen at all or would not deliver the full amount of the contribution to the budget assigned to them.
122. The second sentence of the underlined text deals with the ambition required to achieve this, and advises that this is "reasonable" having regard to delivery risk (Annex B) and the "wider context". Later in the submission (at paragraph 13), it is stated under the heading "Delivery risk and further considerations (further detail in Annex B)" that "To assess whether the proposals and policies are sufficient, you must consider the risks to delivery of the emissions savings that **each of the proposals and policies carries**". Annex B does not contain any reference to proposals and policies within the package not being delivered at all, or in full. The "wider context" cannot mean that either. The reference to Annex B and to the "wider context" reads as the explanation for why the Secretary of State can assume that each of the proposals and policies will be delivered in full: that is, there are delivery risks, but they can be overcome, especially when one considers the wider context.
123. This interpretation is also supported by the language used in the earlier submissions to the Secretary of State, where the underlying assumption was that all of the proposals and policies would be delivered in full. In the introductory brief submitted on November 8th 2022, the Secretary of State was told that "Our most recent projections from August show we have sufficient savings to meet carbon budgets and the NDC **if all planned policies are delivered in full**" (emphasis added). Similarly, in the submission made to the Secretary of State on 30th November 2022, it was stated that "Latest projections suggest you have sufficient savings to meet carbon budgets **if all planned policies and proposals are delivered in full**" (emphasis added).
124. It was suggested by Mr Moffett KC that the Secretary of State could not have understood the underlined text as meaning that each of the individual proposals and policies would be delivered in full as there was material in the Technical Annex that stated otherwise. Reference was made to the explanation in the Technical Annex that a conservative approach had been taken to modelling; and that "all else equal, there is likely to be more upside than downside risk, which could support meeting carbon budgets". That, however, is not an indication that individual proposals or policies might not be delivered in full.
125. It was also suggested by Mr Moffett KC that there was material in the CBDP, a draft of which was provided to the Secretary of State along with the March submissions, which would support the contrary interpretation. In the CBDP it was stated that "...it is very likely that some proposals or policies will out-perform expectations... some other proposals or policies will under deliver compared to expectations." However, the Secretary of State did not have his attention drawn to this provision in connection with

the underlined text in the submission, so it is difficult to see how the Secretary of State could have had this passage in mind when he was reading the underlined text.

126. If, as I have found, the Secretary of State did make his decision on the assumption that each of the proposals and policies would be delivered in full, then the Secretary of State's decision was taken on the basis of a mistaken understanding of the true factual position. Indeed, this is the Secretary of State's own case to this Court: Mr Moffett KC acknowledged that not all of the proposals and policies would be delivered in full.
127. As a matter of law, therefore, in making this assumption the Secretary of State made an irrational decision in the sense explained by Saini J in *R(Wells) v Parole Board* [2019] EWHC 2710 (Admin) at §33. In *Wells*, Saini J held that *Wednesbury* unreasonableness may be made out where there was an unexplained evidential gap or leap in reasoning which fails to justify the conclusion reached by the public law decision-maker. The Secretary of State's decision under section 13 was based on reasoning which was simply not justified by the evidence.
128. This otherwise irrational decision could only be saved if it could be established that the Secretary of State would have been highly likely to reach the same decision even if he had not made that assumption (section 31(2A) of the Senior Courts Act 1981). That proposition was not made on behalf of the Secretary of State at the oral hearing before me. Looking at the matter myself, I cannot see how the very high threshold set out at section 31(2A) could have been met.
129. In the first instance, the counterfactual that I am required to consider under section 31(2A) of the Senior Courts Act 1981 presupposes that the information available to the Secretary of State would have enabled him to reach the conclusion that the 97% emissions savings would be met by the quantified proposals and policies even if not all of the individual proposals and policies would be achieved in full. It is not possible for the Court to find that this was highly likely to have been the case, as the Secretary of State did not have sufficient information to enable him to make that decision. It is not possible to ascertain from the materials presented to the Secretary of State which of the proposals and policies would not be delivered at all, or in full. It was not possible, therefore, for the Secretary of State to have evaluated for himself the contribution to the overall quantification that each of the proposals and policies was likely to make, bearing in mind that this evaluation had to be made by the Secretary of State personally: he could not simply rely on the opinions of his officials. The section 13 decision was one for him to make.
130. None of the commentary – or the narrative risk – provided to the Secretary of State reads as if the policy will not happen at all, or in full. From the material provided, the Secretary of State could not work out, therefore, whether and which of the quantified policies were likely to miss the target by a small or a large amount, and he could not evaluate for himself whether, and if so the extent to which, any shortfall from the policies that under-delivered would be compensated for by those policies that over-delivered. To take the example of proposal number 159 from Table 2 to Annex B (slurry: see paragraph 47 above), it is simply not possible for the Secretary of State to have evaluated from himself whether this proposal would miss the target, and if so by how much.

131. The material in the draft CBDP that there would be over-delivery and under-delivery was vague and unquantified, and so did not provide the Secretary of State with sufficient information to make his own evaluation or assessment. Furthermore, although there was reference in the submissions (and in the “read out” of the Secretary of State’s decision) to the fact that the package does not fully reflect emissions savings from policies developed outside government, particularly local government, there is no information available to the Secretary of State from which he could evaluate what level of savings those additional policies might be able to generate within the relevant time-frame. The Secretary of State would not have been able to determine therefore, whether those additional policies would offset the shortfall from the quantified policies that did not meet their targets in full.
132. If I am wrong about the assumption made by the Secretary of State, and he did not consider that each of the proposals and policies would be delivered in full, then his decision under section 13 of the CCA 2008 is flawed and would therefore have been unlawful because he was not provided with sufficient information as to the obviously material consideration of risk to the individual proposals and policies. As already explained, the Secretary of State had no way of knowing which proposals and policies might not be delivered, or delivered in full; he could not calculate therefore what “over-delivery” was required from the other quantified proposals and policies, and whether those other quantified proposals and policies would meet the shortfall.
133. In reaching the latter (alternative) decision, I do not consider that it was necessary for the commentary or narrative risk provided to use the same language as used in the descriptors from the RAG ratings – “low confidence” or “very low confidence”. It was appropriate for the officials to use a proxy for this, such as “uncertain delivery risk” accompanied by a narrative description of the risk and the proposed mitigations.
134. I also do not consider that the information provided to the Secretary of State was, as Mr Wolfe KC put it, “Panglossian”¹, or that it was provided on the basis of letting the Secretary of State know what the officials thought he wanted to hear. I also do not consider that the information was misleading. A clear description was provided to the Secretary of State about the risks involved with a particular proposal and policy and the kinds of mitigation measures that would or could be applied. However, the information provided was incomplete. It was necessary to say more if the Secretary of State was to work out for himself whether the proposal or policy was likely to miss the target by a small or large amount and if so by how much.
135. I do not consider that, as a matter of principle, it was necessary for the Secretary of State to be provided with advice or information as to the cumulative risk affecting the various proposals and policies, so long as he had sufficient information to work this out for himself. Nevertheless, the failure to identify which, and by how much, individual proposals and policies were likely to miss their targets, meant that the Secretary of State could not work this out for himself.
136. In his witness statement, Mr Thompson set out the difficulties in quantifying and weighing risk for each and every policy, stating that to do so would be extraordinary in its complexity and would require additional resource. I do not underestimate the

¹ An allusion to the fictional character, Pangloss, the tutor of Candide in Voltaire’s novel bearing the latter’s name.

difficulties that may be involved in carrying out this exercise for each and every policy. However, that does not seem to be the task that the officials would have been required to carry out. It is clear from the officials' own assessments that many of the proposals and policies are most likely to be delivered. If so, then further estimation would not have been required for these. It is only those proposals and policies which were at most risk of not being achieved that would have needed further analysis. Mr Thompson's evidence did not address that.

137. Moreover, even if there were difficulties in providing the latter analysis, the material could have been presented in the way suggested by Ms Simor KC: that is, the quantification of emissions reductions forecast in CB6 could have been adjusted to reflect that some of the policies were unlikely to be delivered or achieved in full. This could have been accompanied by a further forecast reflecting the possibility that there would be "over-delivery" of some of the proposals and policies. The Secretary of State could then have compared the different forecasts, and made his own evaluation of what was likely to transpire.
138. I do not consider that the information presented to the Secretary of State about the Devolved Administrations was insufficient for him to make the section 13(1) decision. It is accepted that the information provided about the Devolved Administrations was limited. Further information was simply not available as to what would happen in each of the nations for the entire CB6 budget period. Rather than leave a gap in the analysis for what might happen in the nations outside of England, the officials adopted the approach of scaling up from the English experience where that was appropriate. This enabled the Secretary of State to make an assessment as to what contribution the Devolved Administrations would be likely to make to meeting the carbon budgets, including CB6. That assessment was not obviously irrational.
139. I also do not consider that the Secretary of State needed to be told specifically that certain EEP policies had low delivery confidence. As Mr Moffett KC has explained, such uncertainties were taken into account when modelling the EEP baseline. In this regard, I have in mind the explanation of the modelling approach in the Technical Annex to the CBDP, which states:
- "In our approach to modelling the assumptions we need to make, we have taken, on balance, a conservative approach to err on the side of caution, with the effect of either increasing the size of emissions savings required (as discussed above on the baseline) or of reducing the potential effectiveness of policies (for example by assuming slower take-up of technologies than recent evidence suggests)".
140. The Claimants made a number of other points challenging the rationality of the Secretary of State's decision under section 13(1) of the CCA 2008. These include that: (i) the Secretary of State's own officials, and those in DEFRA, had assessed some risk and uncertainty; (ii) the CCC had produced its own expert analysis in relation to CB6; (iii) the scale and nature of the challenge of meeting CB6 was considerable given that most of the "easy wins" or "low hanging fruit" had been picked; and (iv) the EEP-ready policies and proposals also involved risks. These points were powerfully made, but would not in my judgment come close to satisfying the threshold of irrationality had the error identified above not been made by the Secretary of State.

141. I agree with Mr Moffett KC that the Court should apply a low intensity of review to the section 13(1) assessment made by the Secretary of State. The Secretary of State's decision involved an evaluative, predictive judgment as to what may transpire up to 14 years into the future, based on a range of complex social, economic, environmental and technological assessments, themselves involving judgments (including predictive judgments), operating in a polycentric context. These are not matters in respect of which the Court has any real expertise or competence, whereas the Secretary of State will be able to rely on officials with considerable expertise across the various domains (social, economic, environmental and technological), and the Secretary of State will himself have an experience of what is practicable within the governmental and wider political context.
142. This is not to say that the subject matter of the Secretary of State's decision under section 13 of the CCA 2008 is not of considerable importance. It plainly is. Nevertheless, it is clear from the statutory framework that Parliament itself is the proper forum in which scrutiny and interrogation of the Secretary of State's proposals and policies is properly to take place, aided by the expert contributions made by the CCC: including through the CCC's annual reports under section 36 of the CCA 2008. Given the clear role for the CCC and Parliament set out in the legislation, there is no indication that Parliament intended the Court to do anything other than apply the ordinary - and not enhanced - supervisory jurisdiction of judicial review.

Ground 4: The Secretary of State applied the wrong legal test to section 13(3) of the CCA 2008 ("sustainable development")

Arguments

143. Section 13(3) of the Act states:

“The proposals and policies, taken as a whole, must be such as to contribute to sustainable development.”

144. Mr Wolfe KC argues that this provision imposed a mandatory statutory requirement on the Secretary of State to reach the conclusion that the proposals and policies for meeting CB6, taken as a whole, will contribute to sustainable development. He argues that the Secretary of State has failed to meet this requirement, because in the CBDP he states in relation to sustainable development only that:

“There are both positive and negative natural capital impacts associated with these proposals and policies but the overall contribution to sustainable development is likely to be positive.”

(Emphasis added). Mr Wolfe KC submitted that a finding that the impact of the proposals is “likely to be positive” is clearly not the same as a finding that it will be positive.

145. On behalf of the Secretary of State, Mr Badger replies that section 13(3) of the Act does not impose a threshold of certainty. First, because such an approach would result in section 13(3) imposing a higher standard than the section 13(1) duty, despite the fact that it is plainly ancillary to the section 13(1) duty. Second, because it cannot be realistic that the statute imposes such a duty, in circumstances where there is inherent

uncertainty involving a predictive judgment. Third, Mr Badger argues that the use of “must” in section 13(3) is not intended to connote a threshold of certainty, but instead to identify that the Secretary of State is under a duty to conduct an evaluative assessment that the proposals are expected to contribute to sustainable development.

Discussion

146. The term “sustainable development” is not defined in the CCA 2008. The Divisional Court in *R (Spurrier) v Secretary of State for Transport* [2019] EW HC 1070 (Admin) at §635 held that it was an “uncontroversial concept” which had been defined in the planning context as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”
147. During the course of argument, I raised with Mr Badger the proposition that on its face section 13(3) did not appear to require an assessment or evaluation at all by the Secretary of State. Rather, that the statutory language was suggestive of a factual assessment: that is, whether in fact the proposals and policies contribute to sustainable development or not. This would not be a matter for the Secretary of State to determine, but would be a matter for the Courts if there is a challenge to the adequacy of the proposals and policies in contributing to sustainable development.
148. On its face, there is no reference within section 13(3) to the Secretary of State making an assessment, or considering anything, at all. This is in clear contrast with subsections (1) and (4) which refer specifically to the Secretary of State and what he may or must consider. Section 13(3) can also be contrasted with subsection (2). The latter subsection does not expressly refer to the Secretary of State, but it does state that “The proposals and policies must be prepared with a view to meeting” certain targets, and so it is implicit in this subsection that the Secretary of State’s thought process is involved.
149. Mr Badger pushed back against this reading of the legislation, and argued that the whole structure of section 13 involved an evaluation by the Secretary of State. I agree. Section 13(3) needs to be read as forming part of the same evaluation or assessment as the Secretary of State is carrying out at subsection (1): will the proposals and policies enable the carbon budgets to be met. To decide otherwise would involve the Court engaging in a process for which it is not equipped, and for which it would have to rely on expert evidence. It would be surprising if Parliament had intended for the Court to have such a role.
150. As for what the term specifically means in the context of an evaluative assessment by the Secretary of State under section 13(3), I consider it connotes a degree of certainty that a particular outcome will eventuate. The term “must” is used elsewhere in section 13 (subsections (1) and (2)), and in both of those instances it is understood to mean that the Secretary of State has to carry out a particular exercise. He is obliged to do so. There is no obvious reason why the draftsman would have used the same term at subsection (3) if it was to bear a very different meaning.
151. As for Mr Badger’s suggestion that section 13(3) is merely ancillary to subsection (1) and so could not impose a greater obligation on the Secretary of State, this does not necessarily follow. The two subsections are dealing with different targets or outcomes, and the assessment as to whether they will be achieved may require different thresholds. In section 13(1) the focus is on actually meeting the carbon budgets; the outcome or

target is absolute. In those circumstances, given that one is dealing with a predictive assessment, with so many imponderables, an evaluative assessment based on the likelihood that the outcome or target will be enabled makes sense. The focus of subsection (3) is on “sustainable development” and whether the proposals and policies will “contribute” to that target or outcome, not that there will actually be “sustainable development”. As the target or outcome – to contribute – is lower, there is no reason why Parliament could not have intended for a greater degree of certainty that it would be achieved.

152. As for whether the Secretary of State’s assessment did reach the required threshold under subsection (3), it was stated in the CBDP that the proposals and policies are “likely” to make that contribution. I understand that to mean that the Secretary of State considers that there is a greater than evens chance of the contribution being made, but not higher. The Secretary of State does not qualify the term with “highly” or “very”, which would connote a higher degree of certainty. In the circumstances, I do not consider that the Secretary of State’s assessment comes near to the much higher threshold that is mandated by section 13(3). On no reasonable view, could it be said that “likely” means “must”.
153. In my judgment, therefore, the Secretary of State erred in making his decision under section 13(3) of the CCA 2008.

Ground 5: did the Secretary of State fail to comply with s 14 of the Act because he failed to include in the CBDP information that he was required to include?

Arguments

154. Mr Wolfe KC for Friends of the Earth, and Mr Lockley for the Good Law Project, argue that information on delivery risks qualifies as information “*obviously material to the critical issue of risk to the delivery of statutory targets*” and that, following *Holgate J* at §254, this should have been published under section 14 of the Act. They argue that the information on delivery risk included in the CBDP was insufficient, because it was limited to:
- i) A high level summary of the delivery risk to the packages of proposals and policies: which notes that policies and proposals in the EEP baseline “have high delivery confidence” but non-EEP policies and proposals “*vary in their delivery confidence ...as we move towards Carbon Budget 6, a greater number of proposals and policies that are currently at an earlier stage of development will move into implementation and form part of the EEP baseline, giving higher delivery confidence.*”
 - ii) Sectoral summaries of the delivery risk picture included in Appendix D of the CBDP entitled “*sectoral summaries of delivery confidence*”.
155. Neither of the above addresses the delivery risk associated with each individual policy. Mr Wolfe KC and Mr Lockley argue that individual delivery risk was a mandatory material consideration in the Secretary of State’s decision-making process. They both argue that the Risk Narratives, or equivalent information, should have been published in order to comply with section 14 of the Act. Mr Wolfe also argues that the RAG tables, or equivalent information, should have been published.

156. Mr Wolfe KC relies on §245 of Holgate J’s judgment which explained that the “*legal adequacy*” of a section 14 report is to be assessed by reference to its legal object, which is “*to enable its readers to understand and assess the adequacy of the Government’s policy proposals and their effects*” and “*in the interests of public transparency*”. Holgate J emphasised that this was important to the democratic process and the constitution as a whole. Mr Wolfe KC argues that, as a result of the failure to publish information on the risks to individual policies, neither Parliament nor the public was given the information necessary to form a judgment on the CBDP. Relatedly, Mr Wolfe KC submits, that the failure to publish this information impacted on the CCC’s statutory function of providing independent scrutiny of the Secretary of State’s plan as set out in a section 14 report.
157. Mr Lockley submits that it is mandatory under section 14 to publish information on anything that is a mandatory material consideration for the purposes of section 13 of the Act. He highlights paragraphs 202(xi); 204, 211, 214 of Holgate J’s judgment, which support the case that information on individual risk is a mandatory material consideration for section 13 purposes. As to the interrelationship between section 13 and section 14: Mr Lockley identifies commentary at §77 of the *Feedback* case, which supports that section 13 and section 14 are twin duties. He also highlights examples from the planning law context which support the need for the Secretary of State to address, in his decision, the mandatory material considerations that were taken into account when reaching that decision.
158. In the alternative, Mr Lockley submits that even if the Secretary of State is not required to publish every section 13 mandatory material consideration in the section 14 report, he is required to publish details of individual risk because this information will always be central to the Secretary of State’s conclusion that her policies and proposals will allow the carbon budgets to be met. He relies on §233 and 241 of Holgate J’s judgment, which establish that the section 14 report must go beyond merely setting out policies and proposals, it must explain them and on §246-247 and 250 which establish the need to provide Parliament, the CCC and the public with information necessary to scrutinise the adequacy and realism of the proposals.
159. In the further alternative, Mr Lockley submits that the section 14 duty requires the Department to publish the Risk Narratives (or equivalent information pertaining to individual risk), in the particular circumstances of the CBDP. This is because the Secretary of State clearly based her overall section 13 conclusion – that the CBDP policies and proposals would be met – on the assumptions that quantified policies would deliver 97% of the reductions required to meet CB6 and this, in turn, rested on the assumption that the “package of policies and proposals are delivered in full”. Even accepting the Secretary of State’s position that by this, he meant that the net emissions reduction would be the same as if all policies and proposals were delivered in full, Mr Lockley submits that this was a very significant and optimistic assumption which required detailed justification in the CBDP.
160. Mr Moffett KC, for the Secretary of State, submits that the legal test against which the Claimants arguments must be assessed is: does the Plan set out an explanation as to why the Secretary of State reached the overarching judgement that the overall package of policies and proposals would enable the carbon budgets to be met? Mr Moffett submits that the CBDP and its Technical Annex do include information sufficient for this purpose. The granular information that the Claimants suggest should have been

published was not relevant to his decision. He submits that Friends of the Earth's contention that the RAG ratings should have been published is baseless. It is common ground that the Secretary of State did not have regard to these RAG ratings when making his section 13 decision, and he cannot be required to publish material to which he did not have regard.

Discussion

161. In my judgment, the material contained in the CBDP complied with the Secretary of State's duty under section 14 of the CCA 2008. The CBDP told Parliament how the Secretary of State proposes to meet the carbon budgets by explaining his thinking behind the proposals and how they will enable the carbon budgets to be met: this included a description of each of the proposals and policies, as well as the contribution that the quantified policies were expected to make to the emission savings, and how it was judged that the shortfall to be made up from unquantified policies would be met. This is precisely the information that Holgate J held should have been provided in the NZS, which was subject to challenge in *FoE (No. 1)*. I do not consider that it is possible to read Holgate J's judgment as supporting an obligation on the Secretary of State to provide risk data, however expressed or portrayed, as part of the section 14 report to Parliament.
162. The section 14 report that is subject to challenge in these proceedings did include summaries of risk at the sectoral level. It does not seem to me that that was required by the statutory language. In any event, I do not consider that section 14 required the Secretary of State to provide further risk information as to the specific policies, whether via the RAG table format or through a narrative description, and how the risks would be overcome. Requiring the Secretary of State to provide information about risk would unduly strain the statutory language of section 14.
163. The express statutory language does not call for any explanation or discussion of the risk factors and how they will be overcome. Nor is it implied or implicit. Holgate J rightly in my judgment held that the statutory language implicitly or impliedly requires the Secretary of State to explain "how" the proposals and the policies will enable the carbon budgets to be met, and that this calls for a description of the proposals and policies and the contribution that they will make to achieving the objective. What the risk factors are and how they are expected to be overcome or mitigated does not explain or describe the proposal or policy, but addresses the operational (whether by way of funding, legislation or otherwise) means by which the proposal or policy might be achieved.
164. The principle of transparency that is inherent in the legislation does not, in my judgment, call for that to be explained. Indeed, as a factual matter, it is clear that in June 2023 the CCC was able to fulfil its statutory role in commenting on the CBDP without having sight of the Secretary of State's risk analysis, or the analysis that was provided to him by officials.
165. As for the contention that the risk information needed to be provided in the CBDP because that information was "obviously material" to the Secretary of State's decision and so had to be included in the CBDP, I disagree. Holgate J's analysis of the statutory obligation did not depend on this. Holgate J's analysis of section 14 from §§ 231 to 241 makes no mention of "obviously material" information. At §249, where Holgate J uses

the term “obviously material [to the risk of delivery]”, this is descriptive of “the contributions made by a multiplicity of proposals and policies adopted by the Secretary of State”. Similarly, at §254, where Holgate J uses the term “obviously material [to the critical issue of risk to the delivery of the statutory targets]”, this is descriptive of the various factors set out at §253 (see paragraph 87 above). I do not consider, therefore, that Holgate J was intending to say that any and all information that was “obviously material” to the decision-making of the Secretary of State under section 13 had to be published by means of the section 14 document.

166. I also reject the argument, made by Mr Lockley, that the CBDP needed to include all obviously material information by analogy with the duty to give reasons. Mr Lockley relied on *South Bucks District Council v Porter (No. 2)* [2004] 1 WLR 1953, where Lord Brown summarised the authorities governing the proper approach to a reasons challenge in the planning context. At §36, Lord Brown stated that:

“The reasons for a decision must be intelligible and they must be adequate. **They must enable the reader to understand why the matter was decided as it was and what conclusions were reached on the “principal important controversial issues”, disclosing how any issue of law or fact was resolved.** Reasons can be briefly stated, the degree of particularity required depending entirely on the nature of the issues falling for decision. The reasoning must not give rise to a substantial doubt as to whether the decision-maker erred in law, for example by misunderstanding some relevant policy or some other important matter or by failing to reach a rational decision on relevant grounds. But such adverse inference will not readily be drawn. **The reasons need refer only to the main issues in the dispute, not to every material consideration.** They should enable disappointed developers to assess their prospects of obtaining some alternative development permission, or, as the case may be, their unsuccessful opponents to understand how the policy or approach underlying the grant of permission may impact upon future such applications. Decision letters must be read in a straightforward manner, recognising that they are addressed to parties well aware of the issues involved and the arguments advanced. A reasons challenge will only succeed if the party aggrieved can satisfy the court that he has genuinely been substantially prejudiced by the failure to provide an adequately reasoned decision.”

(Emphasis added).

167. It does not seem to me that the analogy to a decision in the planning context, or more generally to a decision in any form of litigation, is apt. The planning cases, or litigation, involve disputes between parties on issues of fact and/or law. It is necessary for the decision-maker to resolve those disputes and only fair for the parties, or litigants, to understand why they have won or lost, which involves some intelligible explanation for the conclusion reached. The CBDP is plainly not a matter of litigation; there is no dispute between parties. There are no sides which need to know why they have won or lost. Rather, the CBDP is a plan which explains to Parliament (and to wider

stakeholders) *how* the carbon budget is going to be met, and it is only right that Parliament (and wider stakeholders) understand those matters.

168. The risk information would not be required to be included by the Secretary of State if he had consulted on the CBDP before laying it before Parliament. The *Gunning* principles (see *R v Brent London Borough Council, Ex p Gunning* (1985) 84 LGR 168), approved by the Supreme Court in *R (Stirling) v Haringey London Borough Council* [2014] 1 WLR 3947), require a consulting party to give consultees sufficient explanation and information to enable intelligent consideration and responses by the latter. As Holgate J. explained at §245 that would require sufficient information “to understand and assess the adequacy of the Government’s policy proposals and their effects”. That could be done without supplying the Government’s risk analysis.
169. The risk information is not required to be included in the section 14 report on the basis that it is necessary to inform the annual report that the CCC has to make to Parliament under section 36 of the CCA 2008. The annual report must include the CCC’s views on whether the carbon budgets are “likely to be met”. It was contended that if detailed risk information is not provided in the section 14 report, the CCC cannot scrutinise the Secretary of State’s proposals and policies, and so cannot meet their section 36 duties. This argument is misconceived. There is no explicit textual connection between sections 14 and 36 of the CCA 2008. Rather, the connection within the statute is the other way round: pursuant to section 37 of the CCA, the Secretary of State is required to respond to the CCC’s annual report. If Parliament had intended the CCC’s report under section 36 to respond specifically to the section 14 report, the direct linkage could have been made in the statutory text. Furthermore, the argument presupposes that the CCC does not have its own expertise to consider risk independently of the Secretary of State’s evaluation. The CCC is an expert body, with their own ability to consider the question of risk. Indeed, that is what happened on the facts here.
170. It was suggested in oral argument that this reading of section 14 of CCA 2008 may mean that there is no right of the public to see the risk information. I am not asked to consider the impact here of the Freedom of Information Act 2000. However, I do note that Parliament may be able to call for the risk information, given that the report was provided to Parliament. Indeed, this was commented upon by Holgate J. at §242 “Parliament is well able to call for more information to be provided where it wishes to do so”.
171. In the circumstances, therefore, this ground of challenge fails.

Conclusion

172. I consider that each of the grounds of challenge were arguable, and so permission is granted on each of the grounds. As a matter of substance, the application for judicial review is allowed on Grounds 1, 2, 3 and 4. Ground 5 is dismissed. I shall invite the parties to make submissions on the terms of the order that I should make.

Appendix 5: Book of Reference and Land Rights Tracker (Individual Landowners)

Immingham Green Energy Terminal
 Summary of all **INDIVIDUAL LANDOWNERS** outstanding matters relating to Compulsory Acquisition or Temporary Possession

Name [A]	IP/ AP Ref No. [B]	Agent or Representative [C]	Description of Land and Rights Requested relating to specified plot(s) [D]				Interests [I]	EL Ref Nos. for AP's Representations [J]	EL Ref Nos. for Applicant's Response Refs. [K]	Side Agreements [L]	Heads of Terms [M]	Complete [N]	Status of Objection [O]	Last Updated [P]
			Type of Rights [E]	Plots [F]	Plan Ref No. [G]	Duration of Temporary Rights [H]								
Francis George Windham Brooke Baronet	2	Andrew Clark (Clark Weightman Limited)	Permanent acquisition	4/5, 4/7, 4/9, 4/16, 4/18, 4/19, 4/20, 4/21, 5/1, 5/36, 5/39, 7/19	Sheets 4, 5 and 7 (APP-015)	N/A	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)	N/A	N/A	Not required	Agreement reached	No	Heads of Terms were agreed in March 2024 for the acquisition of land included in DCO Plots 5/45 and 6/19 as well as the release of rights and restrictive covenants across the western development site. The matter was passed to solicitors for completion, however, an additional interest was uncovered following further diligent inquiry by the Applicant. In July 2024 the Applicant had a Teams meeting with the Affected Person's agent to discuss commercial values for the acquisition of their potential subsoil interest in Laporte Road and believe an agreement has now been reached. Solicitors are due to be re-instructed imminently.	25/07/2024
			Permanent rights and temporary possession and use	4/17	Sheet 4 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)							
			Permanent rights in and temporary possession and use of subsoil	4/8, 4/22, 4/23, 5/37	Sheets 4 and 5 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)							
			Temporary possession and use	5/45, 6/19	Sheets 5 and 6 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)							
			Suspend or interfere with private easements or rights only	5/2, 5/5, 5/6, 5/9, 6/1, 6/2, 6/3, 6/4, 6/5, 6/7, 6/8, 6/9, 6/10, 6/11, 6/12, 6/13, 6/17, 7/13, 7/14	Sheets 5, 6 and 7 (APP-015)	N/A	Part 1 (Category 2 – Third Party Interest)							
Kenneth Peter Lyle Mackay, Earle of Inchape	3	Andrew Clark (Clark Weightman Limited)	Permanent acquisition	4/5, 4/7, 4/9, 4/16, 4/18, 4/19, 4/20, 4/21, 5/1, 5/36, 5/39, 7/19	Sheets 4, 5 and 7 (APP-015)	N/A	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)	N/A	N/A	Not required	Agreement reached	No	Heads of Terms were agreed in March 2024 for the acquisition of land included in DCO Plots 5/45 and 6/19 as well as the release of rights and restrictive covenants across the western development site. The matter was passed to solicitors for completion, however, an additional interest was uncovered following further diligent inquiry by the Applicant. In July 2024 the Applicant had a Teams meeting with the Affected Person's agent to discuss commercial values for the acquisition of their potential subsoil interest in Laporte Road and believe an agreement has now been reached. Solicitors are due to be re-instructed imminently.	25/07/2024
			Permanent rights and temporary possession and use	4/17	Sheet 4 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)							
			Permanent rights in and temporary possession and use of subsoil	4/8, 4/22, 4/23, 5/37	Sheets 4 and 5 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)							
			Temporary possession and use	5/45, 6/19	Sheets 5 and 6 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)							
			Suspend or interfere with private easements or rights only	5/2, 5/5, 5/6, 5/9, 6/1, 6/2, 6/3, 6/4, 6/5, 6/7, 6/8, 6/9, 6/10, 6/11, 6/12, 6/13, 6/17, 7/13, 7/14	Sheets 5, 6 and 7 (APP-015)	N/A	Part 1 (Category 2 – Third Party Interest)							

Polynt Composites UK Limited	14	Shoosmiths	Permanent rights in and temporary possession and use of subsoil	4/23	Sheet 4 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)	REP1-106	REP2-016	Not required	Agreement reached	No	Heads of Terms were agreed in April 2024 and a draft lease and agreement for lease is now with solicitors and near to an agreed form. The Applicant anticipates exchanging an agreement for lease prior to the close of examination.	25/07/2024
			Temporary possession and use	4/28, 4/30, 4/32	Sheet 4 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)							
Tronox Pigment UK Limited	15	Blake Morgan LLP	Permanent rights in and temporary possession and use of subsoil	4/23	Sheet 4 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)	RR-027	REP1-021 (Chapter 2, Page 199)	Not required	Agreement reached	No	Heads of terms were agreed in June 2023 and a draft option agreement and lease is now with solicitors. The option agreement and deed of easement are in substantively agreed form. The Applicant anticipates exchanging an option agreement prior to the close of examination.	25/07/2024
			Temporary possession and use	4/26, 4/28, 4/30, 4/32	Sheet 4 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)							
Roger Hoyes	16	N/A	Temporary possession and use	4/26, 4/28, 4/32	Sheet 4 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Lessee or Tenant)	N/A	N/A	Not required	Not required	No	The Affected Person is an occupier of both Tronox and Polynt land under farm business tenancies. The tenancies are to be dealt with through agreements with the freeholders. Heads of Terms have been agreed with both of the freeholders and are with solicitors for the drafting and review of legal agreements. The proposed agreements with Tronox and Polynt specify that the land will be delivered with vacant possession and as such no direct negotiations are required with the Affected Person. Once both agreements are finalised then this entry will be marked as complete.	25/07/2024
Organon Pension Trustees Limited	17	Walker Morris	Permanent rights and temporary possession and use	5/7, 5/8, 5/10, 5/11	Sheet 5 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)	N/A	N/A	Not required	Agreement reached	No	Heads of terms were agreed in November 2023 and a draft option agreement and deed of easement is now with solicitors. The deed of easement is in substantively agreed form. A revised proposal regarding commercial terms relating to the option agreement was provided to the Affected Party on 25 July 2024. The Applicant anticipates exchanging an option agreement prior to the close of examination.	25/07/2024
Elba Securities Limited	18	Giles Johnston (DDM Agriculture)	Permanent rights and temporary possession and use	5/11, 5/12, 5/18, 5/20, 5/22, 6/6, 6/18	Sheets 5 and 6 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)	N/A	N/A	Not required	Subject to negotiations	No	The Applicant has been chasing the Affected Party's agent for their comments on the Heads of Terms since April 2024, however, they are still to review and provide comments. The Affected Party's agent confirmed that they will review the Heads of Terms over the coming months. The Applicant will continue to pursue a voluntary agreement with the Affected Party.	25/07/2024
Integrated Waste Management Limited	19	N/A	Permanent rights and temporary possession and use	5/18, 6/6, 6/18	Sheets 5 and 6 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)	N/A	N/A	Not required	Subject to negotiations	No	Detailed Heads of Terms were issued in April 2024 to secure the rights required to construct and operate the Project and in July 2024 there was a Teams meeting to discuss further. Technical teams have also now met and discussed the proposals, with the Affected Party confirming that they are happy, in principle, with the requirements of the Project. Both the Applicant and Affected Party are considering the Affected Party's environmental permit and whether any changes may be required before entering into a voluntary agreement.	25/07/2024
Infinis Limited	20	N/A	Permanent rights and temporary possession and use	5/18, 6/6, 6/16, 6/18	Sheets 5 and 6 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Lessee or Tenant and Category 2 – Third Party Interest)	N/A	N/A	Not required	Not required	No	The Affected Party are a lessee and subsidiary of Integrated Waste Management Limited. The new drainage rights are to be dealt with through an agreement with the freeholder and as such no direct negotiations are required with the Affected Party. Once an agreement is finalised then this entry will be marked as complete.	25/07/2024
Jackie Cook	21	N/A	Temporary possession and use	7/1, 7/2	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)	N/A	N/A	Not required	Subject to negotiations	No	The Affected Person is aware of the proposed works to telecommunication lines during the construction phase and that therefore periodic access will be required. Due to the nature of the works and temporary use, the Applicant has informed the Affected Person that full details of the works and timescales cannot be provided until detailed construction plans are known, which is likely to follow the making of the Order. The Applicant has undertaken to ensure that the Affected Person is kept informed as the Project progresses and will issue another update at the close of examination.	25/07/2024
Mark Cook	22	N/A	Temporary possession and use	7/1, 7/2	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)	N/A	N/A	Not required	Subject to negotiations	No	The Affected Person is aware of the proposed works to telecommunication lines during the construction phase and that therefore periodic access will be required. Due to the nature of the works and temporary use, the Applicant has informed the Affected Person that full details of the works and timescales cannot be provided until detailed construction plans are known, which is likely to follow the making of the Order. The Applicant has undertaken to ensure that the Affected Person is kept informed as the Project progresses and will issue another update at the close of examination.	25/07/2024

Bank of Scotland Plc	36	N/A	Temporary possession and use	7/2	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 2 – Third Party Interest)	N/A	N/A	Not required	Not required	No	The Affected Party are a mortgagee for 62 Kings Road. The periodic access which will be required during the construction phase is to be dealt with through an agreement with the freeholders and tenant and as such no direct negotiations are required with the Affected Party. Once an agreement is finalised then this entry will be marked as complete.	25/07/2024
Deutsche Post Global Mail (UK) Limited	39	N/A	Temporary possession and use	7/6	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 1 – Occupier)	N/A	N/A	Not required	Subject to negotiations	No	The Affected Party are aware of the proposed works to telecommunication lines during the construction phase and that therefore periodic access will be required. Due to the nature of the works and temporary use, the Applicant has informed the Affected Party that full details of the works and timescales cannot be provided until detailed construction plans are known, which is likely to follow the making of the Order. The Applicant has undertaken to ensure that the Affected Party are kept informed as the Project progresses and will issue another update at the close of examination.	25/07/2024
Graypen Limited	41	Walker Morris	Permanent rights and temporary possession and use	5/7, 5/8, 5/10	Sheet 5 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Lessee or Tenant and Category 2 – Third Party Interest)	N/A	N/A	Not required	Agreement reached	No	Heads of terms were agreed in November 2023 and a draft option agreement and deed of easement is now with solicitors. The deed of easement is in substantively agreed form. A revised proposal regarding commercial terms relating to the option agreement was provided to the Affected Party on 25 July 2024. The Applicant anticipates exchanging an option agreement prior to the close of examination.	25/07/2024
JM Trucking Limited	45	N/A	Temporary possession and use	7/6	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 1 – Occupier)	N/A	N/A	Not required	Subject to negotiations	No	The Affected Party are aware of the proposed works to telecommunication lines during the construction phase and that therefore periodic access will be required. Due to the nature of the works and temporary use, the Applicant has informed the Affected Party that full details of the works and timescales cannot be provided until detailed construction plans are known, which is likely to follow the making of the Order. The Applicant has undertaken to ensure that the Affected Party are kept informed as the Project progresses and will issue another update at the close of examination.	25/07/2024
Katherine Elizabeth Broddle	47	N/A	Temporary possession and use	7/2	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 1 – Occupier)	N/A	N/A	Not required	Subject to negotiations	No	The Affected Person is aware of the proposed works to telecommunication lines during the construction phase and that therefore periodic access will be required. Due to the nature of the works and temporary use, the Applicant has informed the Affected Person that full details of the works and timescales cannot be provided until detailed construction plans are known, which is likely to follow the making of the Order. The Applicant has undertaken to ensure that the Affected Person is kept informed as the Project progresses and will issue another update at the close of examination.	25/07/2024
Nationwide Building Society	52	N/A	Temporary possession and use	7/8	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 2 – Third Party Interest)	N/A	N/A	Not required	Not required	No	The Affected Party are a mortgagee for 94 Kings Road. The periodic access which will be required during the construction phase is to be dealt with through an agreement with the freeholders and tenant and as such no direct negotiations are required with the Affected Party. Once an agreement is finalised then this entry will be marked as complete.	25/07/2024
Sam Doy	58	N/A	Temporary possession and use	7/8	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 1 – Occupier)	N/A	N/A	Not required	Subject to negotiations	No	The Affected Person is aware of the proposed works to telecommunication lines during the construction phase and that therefore periodic access will be required. Due to the nature of the works and temporary use, the Applicant has informed the Affected Person that full details of the works and timescales cannot be provided until detailed construction plans are known, which is likely to follow the making of the Order. The Applicant has undertaken to ensure that the Affected Person is kept informed as the Project progresses and will issue another update at the close of examination.	25/07/2024
Sarah Fox Mobile Café	59	N/A	Temporary possession and use	7/5	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 1 – Occupier)	N/A	N/A	Not required	Subject to negotiations	No	The Affected Party are aware of the proposed works to telecommunication lines during the construction phase and that therefore periodic access will be required. Due to the nature of the works and temporary use, the Applicant has informed the Affected Party that full details of the works and timescales cannot be provided until detailed construction plans are known, which is likely to follow the making of the Order. The Applicant has undertaken to ensure that the Affected Party are kept informed as the Project progresses and will issue another update at the close of examination.	25/07/2024
Simon John Coghlan	60	Walker Morris	Permanent rights and temporary possession and use	5/7,5/8, 5/10, 5/11	Sheet 5 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)	N/A	N/A	Not required	Agreement reached	No	Heads of terms were agreed in November 2023 and a draft option agreement and deed of easement is now with solicitors. The deed of easement is in substantively agreed form. A revised proposal regarding commercial terms relating to the option agreement was provided to the Affected Party on 25 July 2024. The Applicant anticipates exchanging an option agreement prior to the close of examination.	25/07/2024

The Right Honourable Charles John Pelham The Eighth Earl of Yarborough	61	Andrew Clark (Clark Weightman Limited)	Permanent acquisition	4/5, 4/7, 4/9, 4/16, 4/18, 4/19, 4/20, 4/21, 5/3, 5/4, 5/36, 5/39, 7/15, 7/16, 7/17, 7/18, 7/20, 7/21, 7/22, 7/23	Sheets 5 and 7 (APP-015)	N/A	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)	N/A	N/A	Not required	Agreement reached	No	Heads of Terms were agreed in March 2024 for the acquisition of land included in DCO Plots 5/45 and 6/19 as well as the release of rights and restrictive covenants across the western development site. The matter was passed to solicitors for completion, however, an additional interest was uncovered following further diligent inquiry by the Applicant. In July 2024 the Applicant had a Teams meeting with the Affected Person's agent to discuss commercial values for the acquisition of their potential subsoil interest in Laporte Road and believe an agreement has now been reached. Solicitors are due to be re-instructed imminently.	25/07/2024
			Permanent rights and temporary possession and use	4/17, 5/18, 6/6, 6/18	Sheets 4, 5 and 6 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)							
			Permanent rights in and temporary possession and use of subsoil	4/8, 4/22, 4/23, 5/37	Sheets 4 and 5 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)							
			Temporary possession and use	5/45, 6/19, 7/6	Sheets 5, 6 and 7 (APP-015)	Up to 11 years	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)							
Tortank Limited	62	N/A	Temporary possession and use	7/5	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 1 – Occupier)	N/A	N/A	Not required	Subject to negotiations	No	The Affected Party are aware of the proposed works to telecommunication lines during the construction phase and that therefore periodic access will be required. Due to the nature of the works and temporary use, the Applicant has informed the Affected Party that full details of the works and timescales cannot be provided until detailed construction plans are known, which is likely to follow the making of the Order. The Applicant has undertaken to ensure that the Affected Party are kept informed as the Project progresses and will issue another update at the close of examination.	25/07/2024
TSB Bank Plc	63	N/A	Temporary possession and use	7/3	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 2 – Third Party Interest)	N/A	N/A	Not required	Not required	No	The Affected Party are a mortgagee for 64 Kings Road. The periodic access which will be required during the construction phase is to be dealt with through an agreement with the freeholder and as such no direct negotiations are required with the Affected Party. Once an agreement is finalised then this entry will be marked as complete.	25/07/2024
Unknown	65	N/A	Temporary possession and use	3/2, 4/29	Sheets 3 and 4 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)	N/A	N/A	Not required	Subject to negotiations	No	Gateley Hamer continue to make diligent enquiries regarding ownership in order to facilitate a voluntary agreement.	25/07/2024
Unknown	66	N/A	Temporary possession and use	4/26	Sheet 4 (APP-015)	Approximately 3 years	Part 1 (Category 2 – Third Party Interest)	N/A	N/A	Not required	Subject to negotiations	No	Gateley Hamer continue to make diligent enquiries regarding the third party interest in order to facilitate a voluntary agreement.	25/07/2024
Unknown	67	N/A	Permanent rights and temporary possession and use	5/10	Sheet 5 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)	N/A	N/A	Not required	Subject to negotiations	No	Gateley Hamer continue to make diligent enquiries regarding ownership in order to facilitate a voluntary agreement.	25/07/2024
Unknown	68	N/A	Permanent rights and temporary possession and use	5/11, 5/13, 5/14	Sheet 5 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)	N/A	N/A	Not required	Subject to negotiations	No	Gateley Hamer continue to make diligent enquiries regarding ownership in order to facilitate a voluntary agreement.	25/07/2024
Unknown	69	N/A	Permanent rights and temporary possession and use	5/15	Sheet 5 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)	N/A	N/A	Not required	Subject to negotiations	No	Gateley Hamer continue to make diligent enquiries regarding ownership in order to facilitate a voluntary agreement.	25/07/2024
Unknown	80	N/A	Permanent rights and temporary possession and use	6/16	Sheet 6 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner)	N/A	N/A	Not required	Subject to negotiations	No	Gateley Hamer continue to make diligent enquiries regarding ownership in order to facilitate a voluntary agreement.	25/07/2024
Unknown	71	N/A	Permanent rights and temporary possession and use	7/6	Sheet 7 (APP-015)	Approximately 11 years	Part 1 (Category 2 – Third Party Interest)	N/A	N/A	Not required	Subject to negotiations	No	Gateley Hamer continue to make diligent enquiries regarding the third party interest in order to facilitate a voluntary agreement.	25/07/2024

Appendix 6: Book of Reference and Land Rights Tracker (Statutory Undertakers)

Immingham Green Energy Terminal
 Summary of all **STATUTORY UNDERTAKERS** outstanding matters relating to Compulsory Acquisition or Temporary Possession

Name [A]	IP/ AP Ref No. [B]	Agent or Representative [C]	Description of Land and Rights Requested relating to specified plot(s) [D]				Interests [I]	EL Ref Nos. for AP's Representations [J]	EL Ref Nos. for Applicant's Response Refs. [K]	Engagement of s127 and s138 [L]	Protective Provision Status [M]	Side Agreements [N]	Heads of Terms [O]	Complete [P]	Status of Objection [Q]	Last Updated [R]
			Type of Rights [E]	Plots [F]	Plan Ref No. [G]	Duration of Temporary Rights [H]										
Anglian Water Services Limited	72	N/A	Permanent rights and temporary possession and use	5/11, 5/12, 5/13, 5/14, 5/18, 5/22, 6/18	Sheets 5 and 6 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Lessee and Category 2 – Third Party Interest)	RR-001	REP1-021 (Chapter 2, Page 2)	Section 127 – Yes (in respect of the acquisition of rights only under section 127(5))	Agreed	Not required	Subject to negotiations	No	Protective Provisions in favour of the Affected Party were agreed on 24 June 2024. Heads of Terms remain as 'Subject to Negotiations' as this relates specifically to the leasehold interest the Affected Party have in relation to DCO Plot 5/14. For the avoidance of doubt, 'Subject to Negotiations' does not relate to Protective Provisions or any asset protection arrangements but instead to the property matters which may follow the making of the Order.	25/07/2024
			Suspend or interfere with private easements or rights only	5/19, 5/21, 5/40, 5/41, 5/42	Sheet 5 (APP-015)	N/A	Part 1 (Category 2 – Third Party Interest)									
Cadent Gas	74	N/A	Permanent rights and temporary possession and use	5/10, 5/11, 5/12, 5/18, 5/20, 5/22, 6/6	Sheets 5 and 6 (APP-015)	Approximately 3 years	Part 1 (Category 2 – Third Party Interest)	RR-002, REP1-088	REP1-021 (Chapter 2, Page 5), REP2-010	N/A	Subject to negotiations	Subject to negotiations	Not required	No	Discussions between the parties are ongoing as to the final form of Protective Provisions with three matters outstanding. The Applicant understands that Cadent will be submitting representations at Deadline 6 with its preferred Protective Provisions. The Applicant will continue to endeavour to reach agreement with Cadent on these outstanding matters.	01/08/2024
			Permanent rights in and temporary possession and use of subsoil	7/12	Sheet 7 (APP-015)	Approximately 3 years	Part 1 (Category 2 – Third Party Interest)									
			Suspend or interfere with private easements or rights only	6/2, 6/5, 6/8, 6/10, 6/17, 7/13	Sheets 6 and 7 (APP-015)	N/A	Part 1 (Category 2 – Third Party Interest)									
Network Rail Infrastructure Limited	75	Addleshaw Goddard	Permanent rights and temporary possession and use	5/23, 5/24, 5/25, 5/27, 5/28, 5/29, 5/30, 5/32, 5/33, 5/34	Sheet 5 (APP-015)	Approximately 3 years	Part 1 (Category 1 – Owner and Category 2 – Third Party Interest)	RR-020, REP1-101, REP1-102	REP1-021 (Chapter 2, Page 180), REP2-018, REP5-053	Section 127 – Yes (in respect of the acquisition of rights only under section 127(5))	Subject to negotiations	Subject to negotiations	Subject to negotiations	No	The parties have reached an impasse in respect of the form of easement as requested by Network Rail in respect of the pipelines to be installed as Work No. 6. Network Rail requires any such easement to include provisions enabling the pipeline to be relocated at Network Rail request and for the easement potentially to be terminated. If those rights were invoked and the pipeline could not be relocated, it would render the hydrogen production facility inoperable (the pipeline connects the ammonia storage tank with facilities necessary to produce and distribute hydrogen and the absence of the pipeline connection would undermine both the viability and the functionality of the Project). It is anticipated that Network Rail would withhold its consent under paragraph 55(6) of its protective provisions to the exercise of compulsory acquisition powers to acquire such a right or seek to impose equivalent conditions. If NRL raise concerns regarding safety, their judgement on such issues is at their absolute discretion.	25/07/2024
			Suspend or interfere with private easements or rights only	5/26, 5/31	Sheet 5 (APP-015)	N/A	Part 1 (Category 2 – Third Party Interest)									
Environment Agency	78	N/A	Temporary possession and use	3/2, 4/29, 4/30, 4/32	Sheets 3 and 4 (APP-015)	Approximately 3 years	Part 1 (Category 2 – Third Party Interest)	RR-010, REP1-072, REP1-073, REP3-105, REP4-050, REP4-051, REP5-055	REP1-021 (Chapter 2, Page 21), REP4-045 (Chapter 2, Page 2), REP5-049 (Chapter 2, Page 2)	N/A	Subject to negotiations	Subject to negotiations	Not required	No	Discussions between the Environment Agency and the Applicant are ongoing as to the final agreed form of Protective Provisions and associated Flood Defence Agreement, with the Applicant returning its latest comments on both documents on 29 July 2024 and having had a productive meeting with the Affected Party on 1 August 2024 in respect of appropriate amendments. The Applicant does not see any particular impediment to an appropriate Flood Defence Agreement and Protective Provisions being agreed between the parties in advance of the close of the examination.	01/08/2024
			Suspend or interfere with private easements or rights only	3/1	Sheet 3 (APP-015)	N/A	Part 1 (Category 2 – Third Party Interest)									