

# Net Zero Teesside Project

Planning Inspectorate Reference: EN010103

Land at and in the vicinity of the former Redcar Steel Works site, Redcar and in Stockton-on-Tees, Teesside

The Net Zero Teesside Order

Document Reference: 9.27 Applicants' Response to the Examining Authority's Second Written Questions

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



Applicants: Net Zero Teesside Power Limited (NZN Power Ltd) & Net Zero North Sea Storage Limited (NZNS Storage Ltd)

Date: August 2022

## DOCUMENT HISTORY

<b>Document Ref</b>	9.27		
<b>Revision</b>	1.0		
<b>Author</b>	Nathan Cheung (NC)		
<b>Signed</b>	NC	<b>Date</b>	23.08.22
<b>Approved By</b>	Geoff Bullock (GB)		
<b>Signed</b>	GB	<b>Date</b>	23.08.22
<b>Document Owner</b>	DWD		

## GLOSSARY

<b>Abbreviation</b>	<b>Description</b>
AOD	Above ordnance datum
AS-	Additional Submissions
BAT	Best Available Techniques
BEIS	The Department for Business, Energy and Industrial Strategy
CCGT	Combined Cycle Gas Turbine
CCUS	Carbon Capture, Utilisation and Storage
CEMP	Construction and Environmental Management Plan
CTMP	Construction Traffic Management Plan
CO <sub>2</sub>	Carbon dioxide
CPO	Compulsory Purchase Order
dB	Decibels
DCO	Development Consent Order
dDCO	Draft Development Consent Order
EIA	Environmental Impact Assessment
EPC	Engineering, Procurement and Construction
ES	Environmental Statement
ETS	Emissions Trading Scheme
ExA	Examining Authority
FEED	Front end engineering and design
FRA	Flood Risk Assessment
Ha	Hectares
HDD	Horizontal Directional Drilling
HIA	Hydrogeological Impact Appraisal
HoT	Heads of Terms
kV	Kilovolts
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
Mt	Million tonnes

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NATS	National Air Traffic Services
NSIP	Nationally Significant Infrastructure Project
NWL	Northumbria Water Lagoon
NZT	The Net Zero Teesside Project
NZT Power	Net Zero Teesside Power Limited
NZNS Storage	Net Zero North Sea Storage Limited
PA 2008	Planning Act 2008
PCC	Power Capture and Compressor Site
PDA-	Procedural Deadline A
PINS	Planning Inspectorate
RCBC	Redcar and Cleveland Borough Council
RR	Relevant Representation
SBC	Stockton Borough Council
SEL	Sound Exposure Level
SPA	Special Protection Areas
SoCG	Statement of Common Ground
SoS	Secretary of State
STDC	South Tees Development Corporation
SuDS	Sustainable urban drainage systems
UXO	Unexploded Ordnance
WFD	Water Framework Directive

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## 1.0 INTRODUCTION

### 1.1 Overview

- 1.1.1 This document, the 'Applicants' response to the Examining Authority's Second Written Questions' (Document Ref. 9.27) has been prepared on behalf of Net Zero Teesside Power Limited and Net Zero North Sea Storage Limited (the 'Applicants'). It relates to the application (the 'Application') for a Development Consent Order (a 'DCO'), that has been submitted to the Secretary of State (the 'SoS') for Business, Energy and Industrial Strategy ('BEIS'), under Section 37 of 'The Planning Act 2008' (the 'PA 2008') for the Net Zero Teesside Project (the 'Proposed Development').
- 1.1.2 The Application was submitted to the SoS on 2 and was accepted for Examination on 16 August 2021. A change request made by the Applicants in respect of the Application was accepted into the Examination by the Examining Authority ('ExA') on 6 May 2022. A further change request has been submitted to the ExA at Deadline 6 on 23 August 2022.

### 1.2 Description of the Proposed Development

- 1.2.1 The Proposed Development will work by capturing CO<sub>2</sub> from a new the gas-fired power station in addition to a cluster of local industries on Teesside and transporting it via a CO<sub>2</sub> transport pipeline to the Endurance saline aquifer under the North Sea. The Proposed Development will initially capture and transport up to 4Mt of CO<sub>2</sub> per annum, although the CO<sub>2</sub> transport pipeline has the capacity to accommodate up to 10Mt of CO<sub>2</sub> per annum thereby allowing for future expansion.
- 1.2.2 The Proposed Development comprises the following elements:
- **Work Number ('Work No.') 1** – a Combined Cycle Gas Turbine electricity generating station with an electrical output of up to 860 megawatts and post-combustion carbon capture plant (the '**Low Carbon Electricity Generating Station**');
  - **Work No. 2** – a natural gas supply connection and Above Ground Installations ('AGIs') (the '**Gas Connection Corridor**');
  - **Work No. 3** – an electricity grid connection (the '**Electrical Connection**');
  - **Work No. 4** – water supply connections (the '**Water Supply Connection Corridor**');
  - **Work No. 5** – waste water disposal connections (the '**Water Discharge Connection Corridor**');
  - **Work No. 6** – a CO<sub>2</sub> gathering network (including connections under the tidal River Tees) to collect and transport the captured CO<sub>2</sub> from industrial emitters (the industrial emitters using the gathering network will be responsible for consenting their own carbon capture plant and connections to the gathering network) (the '**CO<sub>2</sub> Gathering Network Corridor**');

- **Work No. 7** – a high-pressure CO<sub>2</sub> compressor station to receive and compress the captured CO<sub>2</sub> from the Low Carbon Electricity Generating Station and the CO<sub>2</sub> Gathering Network before it is transported offshore (the '**HP Compressor Station**');
- **Work No. 8** – a dense phase CO<sub>2</sub> export pipeline for the onward transport of the captured and compressed CO<sub>2</sub> to the Endurance saline aquifer under the North Sea (the '**CO<sub>2</sub> Export Pipeline**');
- **Work No. 9** – temporary construction and laydown areas, including contractor compounds, construction staff welfare and vehicle parking for use during the construction phase of the Proposed Development (the '**Laydown Areas**'); and
- **Work No. 10** – access and highway improvement works (the '**Access and Highway Works**').

1.2.3 The electricity generating station, its post-combustion carbon capture plant and the CO<sub>2</sub> compressor station will be located on part of the South Tees Development Corporation (STDC) Teesworks area (on part of the former Redcar Steel Works Site). The CO<sub>2</sub> export pipeline will also start in this location before heading offshore. The generating station connections and the CO<sub>2</sub> gathering network will require corridors of land within the administrative areas of both Redcar and Cleveland and Stockton-on-Tees Borough Councils, including crossings beneath the River Tees.

### 1.3 The Purpose and Structure of this document

1.3.1 This document sets out the Applicants' response to the ExA's Second Written Questions (ExQ2), which were issued on 9 August 2022.

1.3.2 The Applicants' response to each Written Question is provided in the following sections of the document. The ordering corresponds to the order in which the topics appear on the document published on the Planning Inspectorate's web page. This document does not contain a section for Population and Human Health because no questions were asked.

- Section 2 - General and Cross-Topic Questions
- Section 3 - Air Quality and Emissions
- Section 4 - Biodiversity and Habitats Regulations Assessment
- Section 5 - Climate Change
- Section 6 – Combined and Cumulative Effects
- Section 7 - Compulsory Acquisition and Temporary Possession
- Section 8 - Design Landscape and Visual
- Section 9 – Development Consent Order
- Section 10 - Geology, Hydrogeology and Land Contamination
- Section 11 - Historic Environment

- Section 12 - Major Accidents and Natural Disasters
- Section 13 - Noise and Vibration
- Section 14 - Planning Policy and Legislation
- Section 15 - Socio Economics and Tourism including Marine Users
- Section 16 - Traffic and Transport
- Section 17 - Water Environment

1.3.3 Each section contains a table which includes the reference number for each relevant question, the ExA's comments and questions and the Applicants' response to each of those questions

## 2.0 GENERAL AND CROSS-TOPIC QUESTIONS

ExQ2	Question to:	Question:	Response:
GEN.2.1	Applicants	<p>'Other Consents and Licences' [REP2-007] refers to a number of other consents, licences and permits that would be required for the Proposed Development.</p> <p>The Applicants are asked to:</p> <ol style="list-style-type: none"> <li>i) Provide updates on progress with obtaining these consents, licences and permits throughout the Examination; and</li> <li>ii) Include a section providing an update on these consents, licences and permits in any emerging Statements of Common Ground (SoCG) that are being drafted with the relevant consenting authorities.</li> </ol>	<p>As outlined in the Other Consents and Licences document [APP-077], many of the additional consents and licences required for the construction and operation of the Proposed Development are not needed until later stages of project development – typically either prior to construction or prior to operation. Consequently, most of the consents and licences identified have yet to be progressed and will not be progressed for some time.</p> <p>The exceptions to the above are:</p> <ul style="list-style-type: none"> <li>• Environmental permit for the operation of the proposed generating station. As confirmed in the ISH3 written summary [REP5-025], the permit application was Duly Made on 30<sup>th</sup> June 2022 and the Applicants are arranging a meeting with the determining officer to discuss timescales for the granting of the permit;</li> <li>• Planning &amp; Advanced Reservation of Capacity Agreement, this will be progressed with National Grid Gas plc in 2023,</li> <li>• Connection Agreement for connection to the electricity distribution network is in place with National Grid Electricity Transmission plc.</li> <li>• Carbon dioxide storage licence Store Permit. Please see response to GEN2.5 below.</li> </ul> <p>The Applicants confirm that any emerging SoCGs will reference the progress in obtaining other consents and licences as appropriate.</p>
GEN.2.2	<p>Applicants</p> <p>Redcar and Cleveland Borough Council (RCBC)</p> <p>Stockton-on-Tees Borough Council (STBC)</p>	<p>Table 3.1 of the updated Planning Statement [REP1-003] and the updated Long and Short Lists of Developments [REP4-029 and Appendix 1, REP5-027] include a number of additional relevant development proposals in the vicinity of the Order Limits and updates to the status of previously known proposals.</p> <p>The Applicants are asked to:</p> <ol style="list-style-type: none"> <li>i) At each Deadline, review the tables and figures to include relevant planning applications submitted or determined since production of the most recent lists and confirm whether any such updates would affect the conclusions reached in the Environmental Statement (ES) in particular with regard to cumulative effects;</li> <li>ii) Ensure there are no inconsistencies with the lists provided by RCBC and STBC at Deadline (D)4 and D5, [REP4-041, REP5-039 and REP4-044]; and</li> <li>iii) Provide confirmation that entries 73, 114 and 115 are linked to the same development site and confirm if/ when development has commenced.</li> </ol>	<p>i) The Applicants have reviewed the planning applications listed in Table 3.1 in REP1-003 and note the following updates to the listed developments.</p> <ul style="list-style-type: none"> <li>• Entry 9 in Table 3.1 was approved on 13 May 2022 however this has been identified as ID83 in REP4-029 and Appendix 1 of REP5-027 which did not identify any changes which would affect the conclusions of the ES.</li> <li>• Entry 10 (ID 84 in REP4-029 and REP5-027, Appendix 1) was approved on 8 August 2022. No additional environmental information has been submitted and therefore there is no evidence to suggest that the assessment of cumulative effects should change.</li> </ul> <p>A review of the existing Long and Short Lists of Developments [REP4-028 and Appendix 1 of REP5-027] was carried out and has been submitted as Appendix GEN.2.2. A column has been added to the updated Long List which contains a description of the change to the</p>



ExQ2	Question to:	Question:	Response:
		<p>iv) With reference to the updated Long and Short Lists of Developments [REP4-029 and Appendix 1, REP5-027], the Relevant Planning Authorities (RPAs) are asked at each Deadline to provide details of any additional relevant major planning applications which have since been submitted, and updates to the status of the referenced planning applications as necessary including whether a decision has been made and if so, whether that development has commenced.</p>	<p>development status at Deadline 6 and the effect on the conclusions reached in the ES. Updates to the text within the existing columns are highlighted red.</p> <p>The majority of updates to developments in the Long List at the time of the DCO Application submission [APP-344] (IDs 1 to 91) relate to the completion of the construction phase. None of these developments have submitted any new environmental information and the Applicants are not aware that any developments have not been constructed otherwise than in accordance with the approved plans. Operational cumulative effects were already factored into the cumulative effects assessment and therefore there are no changes to the conclusions reached in the ES.</p> <p>No status changes were identified for planned developments identified since the June 2022 update to the Long List (IDs 92 to 118) except for ID103, which was withdrawn. Accordingly there are no updates to the conclusions reached in the ES.</p> <p>The Applicants have carried out a search of developments submitted since Deadline 4 using the same method and search criteria described in ES Volume I, Chapter 24 'Cumulative and Combined Effects' [APP-106]. No additional developments were identified which meet the criteria for being included the Long List.</p> <p>For the reasons outlined above, none of the changes to existing developments or additional developments identified on the updated Long List are considered to have the potential to result in additional cumulative effects and as such the conclusions of the ES in the original application remain unchanged.</p> <p>ii) The Applicants note that the list of developments submitted by RCBC on pages 7 and 8 of REP4-041 and REP5-039 are identical. As stated in the response to part i), of GEN.2.2, Application Nos.9 (ID 83) and 10 (ID 84) have since been approved. The change to Application No. 10 is captured in the updated Long List submitted at Deadline 6.</p> <p>With regards to STBC's list of developments [REP4-044], please refer to the Applicants' Written Summary of ISH4 [REP5-027, pages 2 and 3]. Only Application Ref. 21/0848/FUL was included on the Long List and there have been no changes to the status of the application.</p> <p>iii) The relationship between ID73, ID114 and ID115 is explained in paragraph 3.1.3 of REP4-029, page 13.</p> <p>ID73 (RCBC Application Ref. R/2020/0357/OOM) was an outline planning application covering a 174ha area that is partly situated in the</p>

ExQ2	Question to:	Question:	Response:
			<p>Southern Industrial Zone and South Bank Enterprise Zone as identified in the South Tees Area SPD Figure 6 (page 48) and Figure 3 (page 25) respectively, as well as the South Industrial Zone as identified in STDC's non statutory document, the South Tees Regeneration Master Plan.</p> <p>ID114 (RCBC Application Ref. R/2022/0343/ESM) was a reserved matters application for a monopile manufacturing facility for SeAH and is one development parcel located within the ID73 application site boundary adjacent to the east of the South Bank coke ovens.</p> <p>ID115 (RCBC Application Ref. R/2022/0355/FFM) was a standalone application submitted in parallel to ID114 for 5.83ha of land outside of the area consented under ID73 required to build ID114. Condition 4 attached to this permission states:</p> <p><i>"4. The development hereby approved shall be carried out in accordance with the details approved under application R/2022/0454/CD relating to the Construction Environmental Management Plan (CEMP) relating to Phase 3 (Reserved Matters for first end user SeAH Monopile Manufacturing Facility) of outline application R/2020/0357/OOM."</i></p> <p>Condition 9 states:</p> <p><i>"9. The development hereby approved shall not provide more than (a) 20,371.7sqm of floorspace (Gross Internal Area) and (b) any amount of floorspace which when added to that provided pursuant to planning permission R/2020/0357/OOM gives a total which exceeds 418,000sqm (Gross Internal Area), unless evidence is submitted to and approved by the local planning authority (in consultation with National Highways) that any additional floorspace above these stated amounts is acceptable in respect of the safe and efficient operation of the highway network."</i></p>

ExQ2	Question to:	Question:	Response:
			<p>Based on the above, ID114 and ID115 are linked by their connection to SeAH's proposed monopile manufacturing facility.</p> <p>ID114 is one portion of development land located within the wider development site in which outline consent was obtained through ID 73. Thus ID73 and ID114 are geographically linked.</p> <p>ID73 and ID115 do not geographically overlap, however, Conditions 4 and 9 of ID115 indicate that this development site will be subject to some of the same environmental controls and floorspace quantum restrictions established by ID73 and as such both development sites are linked.</p> <p>With regard to the commencement of development, RCBC stated in REP4-041 and REP5-039 that works relating to Application No. 5 (ID73) would commence on site in July 2022. This has not been updated and therefore it is assumed that the works have not commenced.</p> <p>The permission attached to ID114 and ID115 does not contain any pre-commencement conditions, however, given that both sites are dependent on ID73 being complete, both sites are assumed to have not commenced.</p> <p>iv) This question is directed to the relevant planning authorities.</p>
GEN.2.3	Anglo American Applicants	<p>The SoCG between the Applicants and Anglo American plc [REP1-030] includes a plan at Appendix A1 providing a comparison of Net Zero Teesside (NZT) DCO Order Limits and Anglo American Overlapping interests. In their response to ExQ1 GEN.1.39 [REP2-073], Anglo American provided some details regarding the current stage of construction of the Woodsmith Project and the Non-Material Change application to the York Potash Harbour Facilities Order 2016.</p> <ul style="list-style-type: none"> <li>i) Can Anglo American provide any updates to these matters, including an anticipated construction start date for the harbour.</li> <li>ii) Are the Applicants aware of any implications for the current programme of construction of Proposed Development?</li> <li>iii) In respect of Appendix A1, due to its size the key is difficult to read and therefore the Applicants are asked to reproduce the key separate from the plan.</li> </ul>	<ul style="list-style-type: none"> <li>ii) The Applicants remain in discussion with Anglo American and continue to collaborate to ensure that both developments can be constructed and co-exist. At this time, the Applicants are not aware of any implications the Anglo American development would have on the programme for the Proposed Development.</li> <li>iii) The Applicants have submitted a revised plan of overlapping interests for the Proposed Development and Anglo American. The plan reflects the revised Order Limits submitted as part of the change request at Deadline 6. This is included at Appendix GEN.2.3.</li> </ul>
GEN.2.4	Applicants Interested Parties (IPs)	<p>At ISH1 and subsequently in the Written Summary of Oral Submission for ISH1 (item 7) [REP1-035] the Applicants stated that individual emitters submitted bids to the Department of Business, Energy and Industrial Strategy (BEIS) in January 2022, 14 of which are in the Teesside area. It was noted that the shortlist was being evaluated by HM Government.</p>	<p>On the 12<sup>th</sup> August 2022, BEIS announced an updated shortlist of eligible emitters for the East Coast Cluster. The 14 potential Teesside emitters referred to in item 7 of the Applicants Written Summary of Oral Submission for Issue Specific Hearing 1 (ISH1) [REP1-035] has subsequently been reduced to 9.</p>

ExQ2	Question to:	Question:	Response:
		<p>The Applicants and IPs are asked to provide an update on the process for securing emitters to join the carbon dioxide (CO<sub>2</sub>) Gathering Network.</p>	<ul style="list-style-type: none"> <li>• Net Zero Teesside Power,</li> <li>• Whitetail Clean Energy,</li> <li>• bpH2Teesside</li> <li>• H2NorthEast</li> <li>• CF Fertilisers Billingham Ammonia CCS</li> <li>• Tees Valley Energy Recovery Facility Project (TVERF)</li> <li>• Norsea Carbon Capture</li> <li>• Redcar Energy Centre</li> <li>• Teesside Hydrogen CO<sub>2</sub> Capture</li> </ul> <p>Each shortlisted emitter project will now enter the negotiation / due diligence stage, leading to decisions by HMG in relation to allocation of support and project offers to allow FID to take place.</p> <p>This process is expected to take place concurrently with the finalisation of the CO<sub>2</sub> Gathering Network. This ensures that final emitter selection is supported by the requisite CO<sub>2</sub> transportation and storage infrastructure and connection agreements for start-up from end 2026.</p>
GEN.2.5	Applicants	<p>At ISH1 and subsequently in the Written Summary of Oral Submission for ISH1 (item 5 and Appendix 5) [REP1-035] the Applicants outlined the timetable for securing consent for the offshore elements of the project.</p> <p>The Applicants provided an update at D5 [REP5-025] and are asked to provide an update at D6 if there is any change, and if appropriate, a further update at D12.</p>	<p>Offshore Environmental Statement: In REP1-035 and REP5-025 the applicants indicated that the offshore ES would be submitted in September 2022. There has been a slight delay in order to incorporate additional data from an offshore borehole and a report on marine archaeology. The likely timeframe for submission to the Offshore Petroleum Regulator for Environment and Decommissioning (“OPRED”) is Q4 2022. Formal submission and public consultation will be made 9-12 months prior to Final Investment Decision (FID) with approval planned to align with the FID.</p> <p>Store permit: Submission of the Store Permit will be delayed in line with the offshore ES. The Store Permit will be submitted 6 months prior to FID with approval planned to align with the FID.</p> <p>Endurance Store lease and seabed leases for infrastructure: The Agreement for Lease letter has been submitted to the Crown Estate. The Crown Estate is processing the request but will not give a timescale for its conclusion. It is expected before the FID.</p>
GEN.2.6	STDC	<p>In its Relevant Representation (RR) STDC [RR-035] refer to Teesworks as being the site of the UK’s largest Freeport.</p> <p>Please show the boundaries of the Freeport on a plan.</p>	N/A
GEN.2.7	Applicants	<p>The EA stated within its RR [RR-024] that the Applicants had not demonstrated that ‘there are no foreseeable barriers’ to the technical</p>	<p>The additional information required to demonstrate that there are no foreseeable barriers’ to the technical feasibility of installing the chosen</p>

ExQ2	Question to:	Question:	Response:
	Environment Agency (EA)	<p>feasibility of installing their chosen carbon plan. Consequently, the EA requested further information from the Applicants regarding the Carbon Capture Readiness process. Responding, the Applicants [REP1-045] indicated that further information on Carbon Capture Readiness (CCR) would be provided to respond to the points raised by the EA and such information would be submitted to the EA for review.</p> <p>The Applicants and the EA are asked to confirm whether this additional information has been provided to the satisfaction of the EA.</p>	<p>carbon capture plant was submitted to the Environment Agency by the Applicants on 4<sup>th</sup> August 2022. To date no response has been received however the Applicants are confident that the information will provide the Agency with the required reassurance. This issue is also being addressed in the draft SoCG between the parties.</p>
GEN.2.8	Applicants	<p>At D5 the EA [REP5-032] commented that the Environmental Permit will require that at least 95% CO<sub>2</sub> is captured in line with the EA's current Best Available Technique position. The Applicants' submission including the ES is based on a capture rate of 90% as a worst-case scenario.</p> <p>The Applicants are asked to confirm whether the 95% capture rate would be achievable using the technology currently proposed.</p>	<p>The Applicants confirm that the design basis being progressed for the carbon capture plant is to achieve a capture rate of 95% in accordance with the current BAT position in the EA guidance. The Applicants are approximately 50% through FEED and remain confident that the 95% capture rate is achievable given the technology proposed by both FEED contractors..</p>
GEN.2.9	Applicants	<p>At various places within the application documents including Table 5.1 of the Gas Connection and Pipelines Statement [APP-073] the range of different approaches to the installation of pipelines is described including tunnel (Micro Bored Tunnel (MBT)), auger bore, trenchless and open cut (and Horizontal Direct Drilling (HDD)).</p> <p>The Applicants are asked to explain why different approaches are required in different locations and the implications of different technologies/ approaches in terms of land requirements.</p>	<p>Open-cut techniques, namely placing and welding a pipe or cable within an excavated trench, are proposed for the connections to the east of Bran Sands Wastewater treatment works and up to the PCC site, i.e. electrical connection, gas connection and waste water discharge and return pipe to Bran Sands. Such techniques are the easiest to achieve in open areas and therefore this technique is the default installation method where other constraints are not present. Trenchless technologies are used to cross under physical constraints such as rivers, roads, rail lines and other pipelines. Trenchless techniques include tunnelling, horizontal directional drilling or auger boring. There are a number of factors that influence the selected trenchless technique, including bore size, crossing length, crossing depth, and geology.</p> <p>Techniques such as auger boring that are suitable for short, shallow crossings would be used in the Sembcorp Corridor to cross beneath minor roads, railway lines or small water bodies. Whereas, micro-bored tunnelling is used for the construction of larger bore utility tunnels between 0.5 to 4 m in diameter. Micro-bored tunnelling was proposed for the tunnel from North Tees to the PCC site and also for the water discharge outfall. The tunnel from North Tees to the PCC site was removed from the DCO following acceptance of the changes to the DCO application by the ExA in May 2022 [PD-010].</p> <p>HDD techniques are proposed for the CO<sub>2</sub> Export Pipeline and associated power and umbilical connections (Work No. 8). Following preliminary design work, the Applicants now anticipate using HDD</p>

ExQ2	Question to:	Question:	Response:
			<p>techniques, rather than micro-bored tunnelling for the replacement outfall (Work No. 5b). This is based on the pipeline size, the length of trenchless crossing and the potential construction synergies of using the same technique as the CO2 Export Pipeline (Work No. 8).</p> <p>The Applicants are proposing to remove the option of using an HDD bore for the crossing of the River Tees between Navigator Terminals and land to the north of Dabholm Gut as part of the change request submitted at Deadline 6, now that the use of the existing Sembcorp tunnel for crossing the Tees has been confirmed.</p> <p>Use of trenchless techniques generally utilises less land than open cut trenching. Wide areas of land are required at the launch and exit points of the trenchless crossing but only narrow tracts of land are required between the launch and exit points. In contrast, open cut trenching requires a wide corridor along the whole pipeline route to support with excavation, and transport/installation of the pipe spools.</p>
GEN.2.10	Applicants	<p>Paragraph 5.3.10 of the CCR Assessment [APP-074] states that an ongoing review as part of two-yearly Status Reports is not considered necessary by the Applicants.</p> <p>Has this approach been discussed with BEIS or do the Applicants propose that this is addressed through the Development Consent Order (DCO) application process?</p>	<p>The purpose of the two yearly review of CCR assessments is for generating stations that do not fit carbon capture technology and to ensure that such a decision remains appropriate as the technical and commercial landscape changes. In other words, it is a safeguard requiring unabated plant to review the opportunities for installation of carbon capture technology. The proposed generating station associated with this Proposed Development will install carbon capture technology from the outset. This will exceed the minimum requirements of the CCR assessment and fulfil the purpose of any such CCR assessment. Therefore there would be no need to re-evaluate the opportunity to install carbon capture technology every two years. This position has not been discussed with BEIS.</p>
GEN.2.11	Applicants	<p>Paragraph 6.1.1 of the CCR Assessment [APP-074] refers to the Dispatchable Power Agreement currently under development by BEIS. At D5 [REP5-025] the Applicants indicated that a decision by BEIS on NZT's bid is expected soon.</p> <p>i) Has the Dispatchable Power Agreement now been completed and if so, what are the implications for the Proposed Development?                      ii) If not, is there a timescale for its likely conclusion?</p>	<p>i. The Dispatchable Power Agreement proposed terms and conditions were last updated in April 2022. NZT Power is expected to begin negotiations on the "Front End Agreement" shortly following Phase 2 selection, with a view to contractually agreeing this with the government prior to any Final Investment Decision.</p> <p>ii. NZT Power was shortlisted by HMG BEIS on 12 August 2022, along with 8 other Teesside emitters. NZT Power will now enter a due diligence and negotiation stage. Refer to the Applicants' response to GEN.2.4.</p>
GEN.2.12	Applicants	<p>Paragraph 5.3.76 of ES Chapter 5 Construction Programme and Management [APP-087] notes that spoil will be sampled, and any</p>	<p>i) The MMP will be prepared by the contractors following the completion of the detailed design of the Proposed</p>

ExQ2	Question to:	Question:	Response:
	RCBC STBC	<p>contaminated spoil identified will be managed in accordance with the Site Waste Management Plan (SWMP) and a Material Management Plan (MMP) which will be prepared and appended to the Final Construction Environmental Management Plan (CEMP). A Framework SWMP has been developed as part of the Framework CEMP [APP-246].</p> <ul style="list-style-type: none"> <li>i) The Applicants are asked to explain why the MMP does not form part of the Framework CEMP.</li> <li>ii) How would the MMP be secured through the DCO?</li> <li>iii) RPAs are asked for their comments on the Framework CEMP [REP5-013], given that the RPAs will be responsible for approving a finalised version of the CEMP through Requirement (R)16 of the draft DCO (dDCO).</li> </ul>	<p>Development and was therefore not available at the time of drafting the Framework CEMP nor at this stage in the design process, since the MMP will need to detail material types, volumes and handling methods. It will be appended to the Final CEMP.</p> <ul style="list-style-type: none"> <li>ii) The Applicants will insert a new sub-paragraph in Requirement 16(2) to specify that the final CEMP must include: <i>"a materials management plan in accordance with paragraph 5.3.76 of chapter 5 of the environmental statement"</i></li> <li>iii) N/A</li> </ul>
GEN.2.13	Applicants INEOS Nitriles Ltd Other IPs	<p>In various sections of the ES, it is stated that decommissioning relates to above ground infrastructure only. Nevertheless, in response to ExQ1 CA.1.11 INEOS Nitriles Ltd commented that decommissioning was considered to be inadequately dealt with in the scheme requirements with no objective trigger included. INEOS would like an independently enforceable obligation for the removal of redundant infrastructure including financial guarantees to be in place to ensure that this can be achieved without recourse to the existing landowners. Responding, the Applicants stated (section 9.2 of [REP3-011]) that R32 had been updated to provide for a decommissioning plan which secures the decommissioning of the Proposed Development, backed up by clear and stringent enforcement powers. Paragraph 9.2.3 references the need for a decommissioning fund being identified.</p> <ul style="list-style-type: none"> <li>i) The Applicants are asked to explain why the Proposed Development does not address the decommissioning of below ground structures. Is it appropriate that below ground structures are left in-situ? Further detail about the decommissioning fund should also be provided.</li> <li>ii) INEOS Nitriles is asked to comment on the Applicants' response [REP3-011] including the proposed amendments to R32 and the comments at paragraph 9.2.3.</li> <li>iii) Other IPs are also invited to comment on the provisions to address decommissioning.</li> </ul>	<ul style="list-style-type: none"> <li>i) The wording of R32 does not limit the Applicants to decommissioning of above ground structures only. The decommissioning plan generated under R32 will cover the full extent of the Proposed Development proposed for decommissioning. The Applicants will assess the most appropriate methods of decommissioning and identify if any apparatus such as those installed via trenchless techniques would be abandoned. The most appropriate decommissioning approach will be based on the residual risk and environmental effects of removal versus leaving in situ.</li> </ul> <p>The Applicants are continuing to work with BEIS on the Transport and Storage business model development. There has been no further update by BEIS on the decommissioning fund/provision since the January 2022 update, included in Appendix GEN.2.13 (electronic pages 61 – 64).</p>
GEN.2.14	Applicants EA	<p>At paragraph 5.1.2 of the Combined Heat and Power (CHP) Assessment [AS-016] it is stated that at that stage no detailed consultation with the EA had taken place about the heat loads used in the CHP Readiness Assessment.</p> <p>Can the Applicants and the EA confirm whether there was any subsequent discussion and agreement?</p>	<p>No further consultation on heat loads has been undertaken with the Environment Agency given that the CHP assessment concluded that CHP opportunities from the Proposed Development were not identified to be viable so no further discussion was considered necessary.</p>
GEN.2.15	Applicants	<p>Paragraph 5.2.4 of the CHP Assessment [AS-016] states that 'The Proposed Development is expected to start as a baseload plant but move to operate in dispatchable mode to support renewables penetration supplying the UK transmission system. This will result in the plant periodically not operating in response to the grid demands as well as maintenance requirements.</p>	<p>The point being made in the CHP Assessment [APP-075] was that for a hypothetical scenario of a district heating system being supplied by the generating station associated with the Proposed Development, given that the generating station is expected to operate intermittently, an additional source of heat would be required to meet the demand of any</p>

ExQ2	Question to:	Question:	Response:
		<p>Therefore, a back-up source of heat may also be required to supply and [sic] district heat network.'</p> <p>Explain what form the back-up source of heat would take and demonstrate how this has been taken into considerations about climate change.</p>	<p>such district heating system. Given this point and other considerations, the conclusion of the CHP report was therefore that CHP provision to a district heating system is not technically and commercially viable from the Proposed Development. Therefore, no such approach is proposed and consequently no further consideration of the effects of a hypothetical back up heating system has been made.</p>
GEN.2.16	Applicants	<p>The CHP Assessment [AS-016] states (paragraph 6.2.4) that 'The CCGT [Combined Cycle Gas Turbine] plant is being developed for dispatchable operation with a baseload period for the first 1-3 years of operation. As more renewable capacity becomes available, the CCGT plant mode of operation will revert to being increasingly dispatchable. This flexibility is being accommodated within the CCGT and capture plant design.'</p> <p>Explain what is meant by 'flexibility is being accommodated within the CCGT and capture plant design'.</p>	<p>The design of the generating station and the carbon capture plant is being progressed on the assumption that the system will need to operate flexibly and in dispatchable mode. This means for example that the design must achieve the required carbon capture rate as efficiently as possible after start-up of the generating station, when the standard design of a carbon capture plant is to run at steady state all the time. The design is likely to therefore include additional solvent management and temperature maintenance provisions and measures to retain process heat in the system so that it can rapidly meet the necessary carbon capture requirements when the generating station comes on line to meet demand.</p>
GEN.2.17	Applicants	<p>Paragraph 4.3.3 of ES Chapter 4 Proposed Development [AS-019] indicates that in unabated mode (without carbon capture) power output could range from around 650 Megawatts (Mwe) to over 850 MWe. It states that the upper limit on power output is ultimately limited by the grid connection, which is rated at 860 MWe.</p> <p>The Applicants are asked to clarify whether the output is reduced because it is being used for carbon capture rather than power being provided to the grid.</p>	<p>The power output will be reduced when operating in carbon abated mode as some of the steam usually used for power generation is redirected to the carbon capture plant to regenerate the amine. The referenced limitation on power output is not related to whether or not the facility is "abated" or "unabated" but instead is with reference to the agreed "Transmission Entry Capacity" of 860MWe which has been commercially agreed with National Grid.</p>
GEN.2.18	Applicants	<p>According to ES Chapter 4 Proposed Development [AS-019] (paragraph 4.3.49) 'The design life of the HP [High Pressure] Compressor Station is longer than the power and capture elements of the Proposed Development. During operation of the Low-Carbon Electricity Generating Station, power for the HP Compressor Station (30 MWe) will be supplied from the generating station with back-up from National Grid's Tod Point substation. After the Low-Carbon Electricity Generating Station has been decommissioned power for the HP Compressor Station will solely come from Tod Point substation.'</p> <p>How has the use of the Tod Point substation been incorporated into considerations about climate change?</p>	<p>The climate change assessment presented in Chapter 21 of the ES supporting the DCO application [APP-103] was based on a worst case assessment of potential carbon emissions from the (construction and) operation of the Proposed Development. This therefore assumed that the generating station would supply the power to the HP compressor and calculated the GHG emissions on the basis of the provision of electricity from the generating station in this way. At the end of the life of the generating station, which is envisaged to be after 2050, based on the UK net zero commitments and carbon budgets, the electricity from the transmission system is expected to be fully decarbonised and therefore its use for the HP compressors will not result in additional GHG emissions. The GHG assessment presented in Chapter 21 of the ES [APP-103] is therefore considered to be conservative.</p>
GEN.2.19	Applicants	<p>ES Chapter 4 Proposed Development [AS-019] (paragraph 4.3.84) indicates that existing ground levels at the proposed location of the Power Capture and Compression (PCC) Site are approximately 4 to 8 m Above Ordnance Datum</p>	<p>i) The Rochdale Envelope in the ES assumes a worst-case final ground level of up to 13 mAOD. This level was used in the LVIA assessment since it gives rise to the tallest potential structures for the purpose of the assessment. Schedule 15 of</p>



ExQ2	Question to:	Question:	Response:
		<p>(AOD). Ground elevations post- site clearance and remediation are anticipated to be a maximum of 13m AOD for the development platform.</p> <ul style="list-style-type: none"> <li>i) Where is the maximum ground level secured in the DCO?</li> <li>ii) Explain how this is compatible with the statement in REP2-016 that the STDC Remediation Strategy for the PCC site confirms that the development platform will be at an elevation of 7.3 m AOD.</li> <li>iii) Clarify why the development platform has apparently been significantly reduced in height.</li> <li>iv) Provide a plan showing the anticipated ground elevations for the PCC site and any other land raise within the development boundary.</li> <li>v) Estimate of the maximum volume of spoil to be generated by the Proposed Development following the initial and proposed change request proposals and tabulate where this would be generated and its final location on or off the site of the Proposed Development.</li> </ul>	<p>the dDCO (Design parameters) provides the maximum dimensions of structures, and expresses the maximum parameters for heights in metres AOD (above ordnance datum). The specified maximums (for example 43m AOD for the gas turbine hall) take into account both the 13m worst-case final ground level and the height of the structure from ground level. The effect of this is that combined height of the ground and the maximum parameters of the buildings is appropriately capped in accordance with what has been assessed in the ES. Accordingly, the Applicants do not consider that it is necessary to also secure the maximum ground level.</p> <ul style="list-style-type: none"> <li>ii) The assumed development platform elevation of 13 mAOD was used as a worst-case within the Rochdale Envelope assessed in the ES, particularly with regards to landscape and visual effects, and was defined prior to confirmation of the Teesworks development platform elevation.</li> <li>iii) The elevation across the current site varies by several metres and at the time of the initial evaluation to inform the environmental impact assessments it was considered to be important to present a worst case upper height to inform consultation on landscape and visual effects especially during statutory consultation. As there had been no cut and fill balance undertaken at that time, a precautionary approach was taken. See ii) above.</li> <li>iv) The elevation of the entire development platform within the PCC site will be 7.3 mAOD. Consequently, no plan is considered necessary. There will be no permanent land-raising outside the PCC site within the Order limits.</li> <li>v) Information on the material required to create the PCC platform is provided in response to GEN.2.20 below. The estimated volume of spoil likely to be generated by the Proposed Development otherwise therefore only relates to: <ul style="list-style-type: none"> <li>- 1,000 m<sup>3</sup> for the replacement outfall HDD,</li> <li>- 6,000 m<sup>3</sup> for the existing outfall (principally shaft construction within the PCC site);</li> <li>- 20,000 m<sup>3</sup> for the CO<sub>2</sub> Export Pipeline as micro-bored tunnel (including power cable and data umbilical) - assuming arisings from tunnelling to 2.5 km offshore are returned to the PCC site for management.</li> </ul>           Excavated materials will be re-used either on-site within the Teesworks development area if required or as construction or landscaping fill in other off-site developments. Off-site disposal         </li> </ul>

ExQ2	Question to:	Question:	Response:
			of arisings to inert landfill would only be considered as a last resort.
GEN.2.20	Applicants STDC	In response to ExQ1 GEN.1.9 (ii) regarding the volume of material required to build the PCC platform, the Applicants stated that STDC has indicated that the PCC platform construction will be neutral in terms of cut and fill and no additional import of material would be required.  The Applicants and STDC are asked to provide evidence to demonstrate that no additional import of material would be required.	The Earthworks Specification submitted by STDC in relation to its planning application for the remediation of the PCC site (R/2021/1048/FFM) confirms the aim is to achieve a neutral cut/fill balance. At this time, it has not been confirmed whether all excavated material can be reused as it will be subject to testing during remediation. Therefore, remediation of the site may require import of material. Prior to import of material from external sources, STDC propose to utilise available stockpiled fill materials from within the Teesworks site.  7.3mAOD was selected as the development platform based on a pre-FEED assessment to determine a suitable height that could be neutral for cut/fill. Importation of materials would be carried out by STDC under a Materials Management Plan.
GEN.2.21	Applicants	ES Chapter 4 Proposed Development [AS-019] (paragraph 4.3.58) confirms that natural gas will be used as the fuel for the operation of the Low-Carbon Electricity Station.  What volume of natural gas would be required to operate the Proposed Development?	The required volume of natural gas to operate the proposed development will vary depending on the load factor of the Low Carbon Electricity Station, but peak usage is expected to be approximately 110 to 120 million standard cubic feet per day (MMSCFD).
GEN.2.22	Applicants	In responding to the RR of NPL Waste Management Ltd [RR-032] the Applicants set out in Table 29.1 of Applicants' Comments on RRs [REP1-045] that they were not at that time 'able to confirm the exact size of pipeline to be installed as this is yet to be finalised however, it has been confirmed the asset will be a maximum of 22inch in diameter'.  The Applicants are asked to clarify which pipeline would cross NPL land and where this diameter is controlled through the dDCO.	The CO2 Gathering Network Pipeline (Work No. 6) would cross NPL land. Schedule 1 of the dDCO [REP5-002] secures the maximum diameter of the pipeline, it is defined as "up to 550 millimetres nominal bore diameter".
GEN.2.23	Applicants	Hartlepool Borough Council (HBC) responded to ExQ1 BIO.1.16 [REP4-038] with the Applicants commenting on the responses [REP5-028]. Table 7.2 indicates that the CEMP is secured through the dDCO at R16 and that this document must be prepared in accordance with the measures set out in the Landscape and Biodiversity Strategy [APP-079].  The Applicants are asked to explain where in either the Framework CEMP or in the Landscape and Biodiversity Strategy this requirement is set out.	Requirement 16 (Construction Environmental Management Plan) of the DCO states:  <i>"(2) The plan submitted and approved must be in accordance with the framework construction environmental management plan and the indicative landscape and biodiversity strategy..."</i>  This secures that the final CEMP must be in accordance with the Landscape and Biodiversity Strategy [APP-079].

### 3.0 AIR QUALITY AND EMISSIONS

ExQ2	Question to:	Question:	Response:
AQ.2.1	RCBC	<p>At D4 [REP4-041], RCBC requested that an odour assessment should be submitted once the final design stage is finalised. The Applicants responded to say that this will be a consideration of the EA permit(s) [REP5-028].</p> <p>Is RCBC content with this response?</p>	N/A
AQ.2.2	Applicants Natural England (NE) EA	<p>At ISH4 the ExA requested an explanation of how the stated level of effects on air quality can be safeguarded without specifying a minimum height (Action 15 [EV8-006]). It is appreciated that conservative assumptions have been incorporated into the air quality monitoring. However, in the absence of an agreed minimum height the stack could be reduced to an unknown and uncontrolled extent following Front End Engineering Design (FEED) [REP5-027]. The emissions are highly sensitive to this parameter and modelling results suggest that NO<sub>2</sub> concentrations at ground level increase rapidly once the stack is less than 90 m in height (Diagram 8B- 2 of [APP-248]).</p> <p>The ExA has noted that dispersion modelling will be carried out on the post-FEED design to ensure that it does not lead to an increase in the level of effect that was presented in the ES and that this will be required by the EA to assist in determination of the permit [REP5-027]. However, an increase in emissions or change in distribution of these has the potential to have an effect on the European Sites that will need to be considered as part of the Habitat Regulations Assessment (HRA). The ExA will need sufficient information by the end of the examination period to make a recommendation to the Secretary of State (SoS) on this matter. There are also potential implications for the WFD assessment and potential effects on the Coatham Sands Site of Special Scientific Interest (SSSI).</p> <p>Please provide by D6:</p> <ul style="list-style-type: none"> <li>i) an update to the HRA Report in respect of this matter taking into account all of the issues raised above;</li> <li>ii) an assessment of the potential effects on the Coatham Sands SSSI if the stack heights were at their lowest possible level; and</li> <li>iii) an assessment of the implications for the WFD assessment if the stack heights were at their lowest possible level</li> </ul> <p>The ExA would welcome comments from NE and the EA on these matters.</p>	<p>Requirement 3(1)(c) of the Draft Order [REP5-002] requires that the height of the stack must be approved by the relevant planning authority as part of detailed design, and specifically that it “must be at a level at which the environmental effects will be no worse than those identified in chapter 8 of the environmental statement”.</p> <p>The effect of this requirement is to ensure that the level of effects on air quality cannot exceed those reported in the ES, no matter what height of stack is ultimately approved by the relevant planning authority. This means that the ExA and the Secretary of State can safely assess and determine the application for development consent on the basis that the effects will not exceed those reported in the existing ES, the HRA Report and the WFD assessment. It also means that any ‘update’ to the HRA Report or other assessment which reflected that legal constraint (effectively an environmental parameter) would necessarily arrive at the same conclusion as the existing version.</p> <p>In short, any stack height that produced an environmental effect that was worse than has been assessed could not be approved by the relevant planning authority. This is a separate control to that exercised by the EA via the permitting process.</p> <p>The actual stack height will be dependent on the final absorber height (and massing), and this will not be known until the technology provider has been selected. It is the downwash effects from the large absorber structure that has the greatest effect on the air quality impacts predicted from the absorber stack.</p> <p>Therefore, it is not possible to provide a minimum stack height at this stage, as, if the actual absorber building massing (and in particular the absorber height) are reduced, then it is possible that a lower stack height than that assessed would lead to a similar or even a lower level of impact than the assessment presented in the ES.</p> <p>The air quality assessment was based on numerous conservative assumptions, with the intention that the worst-case results that would be considered to be acceptable were presented. It is therefore likely that the actual effects will be lower than presented in the ES. Nevertheless, the effect of the requirement is that dispersion modelling of the final design of the operational Proposed Development, and selection of the final stack height,</p>

			will result in predicted impacts that are no worse than those presented in the ES.
AQ.2.3	EA	<p>The EA asked for clarification on application of its M1 monitoring guidance in REP3-027 with particular reference to stack diameters of 6.5 or 6.6 m diameter. In REP5-027, the Applicants stated that the proposed diameters are in the normal range for a Large Combustion Plant and that the M1 guidance will be taken into account.</p> <p>Is the EA content with this response?</p>	N/A

#### 4.0 BIODIVERSITY AND HABITATS REGULATIONS ASSESSMENT

ExQ2	Question to	Question	Response:
BIO.2.1	NE Applicants	<p>ES Chapter 15 Ornithology [APP-097] (paragraph 15.3.19) states that 'The approach to baseline development and the wider EclA [Ecological Impact Assessment] has been discussed with Natural England and other relevant stakeholders throughout the process of Proposed Development design and EIA [Environmental Impact Assessment] to date.'</p> <p>i) Can NE confirm that it is content with this approach?                      ii) The Applicants are asked to confirm which other relevant stakeholders were consulted and the responses which were received.</p>	<p>ii) The Consultation Report [APP-068] submitted with the DCO Application sets out all of the consultees that were contacted and their responses at all stages of the consultation process. Further detail regarding the consultation process with respect to ornithology is set out in paragraphs 15.3.30 – 15.3.35 and Table 15-4 of ES Chapter 15 Ornithology [APP-097]. The key consultees with respect to ornithology were Natural England, the Royal Society for the Protection of Birds and PINS. Responses were received from the parties as set out in the first column of Table 15-4 of ES Chapter 15. In the case of RSPB, their input was received face to face in meetings. NE provided a combination of written responses to the Stage 2 consultation and advice during meetings. Responses relevant to ornithology were also received from Teesmouth Environmental Trust and North York Moors National Park Authority. Comments received from these organisations, responses to them and any appropriate actions arising in terms of development design, baseline data and assessment, are summarised in Table 15-4 of ES Chapter 15 Ornithology [APP-097].</p>
BIO.2.2	IPs	<p>Paragraph 15.3.20 of ES Chapter 15 Ornithology [APP-097] explains that 'A desk study was undertaken throughout 2018/ 2019 and updated in 2020 to identify sites designated specifically for their ornithological interest, as well as protected and notable species of potential relevance to the Proposed Development.'</p> <p>i) Are IPs content with the scope of the desk studies?                      ii) Is an update now required?</p>	N/A
BIO.2.3	Applicants NE	<p>Paragraph 15.7.17 of ES Chapter 15 Ornithology [APP-097] describes how ecological monitoring would be confirmed and agreed as part of the discharge of a Requirement.</p> <p>i) Why is it not proposed to establish the scope of monitoring within the Requirement?                      ii) Is NE content that monitoring is confirmed as part of the discharge of a Requirement?</p>	<p>i) As the monitoring requirements will depend on the results of subsequent confirmatory surveys to be undertaken prior to construction, or if guidance changes in the period between grant of the DCO and start of construction, the Applicants consider that specifying the scope of monitoring in the DCO is premature. It is also not considered to be necessary.</p> <p>ii) N/A</p>
BIO.2.4	Applicants	<p>ES Addendum Appendix B, paragraph 15.8.19 [AS-050] states that a requirement for visual screening (in addition to noise barriers) of the CO<sub>2</sub> pipeline is identified in the updated HRA Report [AS-018], recommending the use of visual screens at specific locations including when working in or near the Special Protection Area (SPA)/ Ramsar pools and lagoons and/ or Dabholm Gut. It indicates that this will be secured as a requirement in the DCO through the Final CEMP.</p> <p>i) As mitigation to address the impact of visual disturbance on breeding birds and species for which the SPA/ Ramsar and SSSI are notified, should it be secured through a specific requirement in the DCO rather than through a measure in the CEMP.</p>	<p>The measures requiring visual screening (in addition to noise barriers) are identified in the updated HRA Report (Document Ref 5.13) submitted at Deadline 6. The Applicants will include a new sub-paragraph in Requirement 16(2) in the dDCO which will specify that the final CEMP to be submitted to and approved by the relevant planning authority must include the measures outlined in the paragraphs of the updated HRA Report (Document Ref 5.13) which reference them. The drafting of this is shown in the Applications Response to the EA's Deadline 5 Submission [Document Reference 9.28]. It should be noted that this mitigation relates to solely to addressing the HDD option across the River Tees. That being the case, this change will not be</p>

		ii) If not, where is it addressed in the Framework CEMP?	made in the dDCO submitted at Deadline 8 if the change request is accepted before this date.
BIO.2.5	Applicants	<p>The application documents identify the following as providing an approach to addressing landscape/ biodiversity:</p> <ul style="list-style-type: none"> <li>i) <u>Landscape</u> and Biodiversity Plan [AS-189]</li> <li>ii) Updated <u>Landscaping</u> and Biodiversity Plan (Schedule 14 of dDCO [REP5-002]);</li> <li>iii) Landscaping and Biodiversity Protection Plan (R4 of dDCO [REP5-002]);</li> <li>iv) Indicative <u>Landscape</u> and Biodiversity Strategy [REP5-011];</li> <li>v) Indicative <u>Landscaping</u> and Biodiversity Strategy (Schedule 14 of dDCO [REP5-002] and</li> <li>vi) Landscaping and Biodiversity Management and Enhancement Plan (R4 of dDCO [REP5-002]). (Our underlining)</li> </ul> <p>Explain how these documents relate to each other and confirm the correct title in each case.</p>	<p>The Applicants acknowledge that various terms have been used to describe these documents in different places but for the avoidance of doubt there are only two documents being referred to – the Indicative Landscape and Biodiversity Strategy and the Landscape and Biodiversity Plan. All other references are incorrect descriptions of these two documents. The Indicative Landscape and Biodiversity Strategy is the high-level specification detailing the technical approach and objectives for landscape design and ecological mitigation and enhancement. The Landscape and Biodiversity Plan is the technical drawing showing the indicative locations of the habitats to be created, as set out and specified in the Indicative Landscape and Biodiversity Strategy. The two documents are intended to be read together. Both documents will be updated and finalised in consultation with relevant stakeholders during the discharge of Requirements. The wording of the draft DCO will be updated to refer to Landscape and Biodiversity Protection Plan, Landscape and Biodiversity Management and Enhancement Plan (the document to be submitted pursuant to Requirement 4), and Indicative Landscape and Biodiversity Strategy. The corrections will be made as part of the dDCO update to be submitted at Deadline 8.</p> <p>The Application Guide (Document Ref. 1.2) has also been updated at Deadline 6 to correct the document titles.</p> <p>The Applicants note that the Examination Library refers to APP-067 as the “Landscaping and Biodiversity Plan” - the Planning Inspectorate may wish to update this to “Landscape and Biodiversity Plan”.</p>
BIO.2.6	RCBC STDC/ Teesworks Estate Management Company Applicants	<p>ExQ1 BIO.1.20 noted that a brief monitoring report would be prepared each year and provided to RCBC and the Teesworks Estate Management Company as a record of compliance (paragraph 6.1.4 of the Landscape and Biodiversity Strategy [APP-079]). In its response, RCBC [REP2-094] expressed contentment with the approach generally and went on to ask whether the report would need to be signed off by RCBC and the Teesworks Estate Management Company. The Applicants [REP3-011] had no comment to make on this response.</p> <p>RCBC, STDC/ Teesworks Estate Management Company and the Applicants are asked to comment on whether or not a formal sign-off process should be required for the monitoring report and if so, how this should be secured.</p>	<p>The Applicants will include a new sub-paragraph in Requirement 4(5) which will specify that the landscape and biodiversity management and enhancement plan approved pursuant to R4(4) must include: “monitoring measures in accordance with the measures and timeframes set out in sections 6 and 7 of the indicative landscape and biodiversity strategy and including a process for submission to and approval by the relevant planning authority of an annual monitoring report and provision of the annual monitoring report to STDC”.</p> <p>The drafting amendments above ensure that the monitoring measures proposed in the Indicative Landscape and Biodiversity Strategy are secured in the DCO, along with the submission to and approval by RCBC of the annual monitoring report. The Applicants’ position is that the formal sign-off process for the annual monitoring report is the same as for the discharge of the other DCO Requirements and that this should be undertaken solely by RCBC in its capacity as the relevant planning authority. The Applicants will</p>

			however include a commitment to share a copy of the annual monitoring report with STDC as they had committed to doing at paragraph 6.1.4 of the Indicative Landscape and Biodiversity Strategy [APP-079].
BIO.2.7	Applicants	<p>Table 7.1 of the HRA Report [REP3-002] lists the plans and projects which could lead to in-combination effects with the Proposed Development. The Applicants' approach to the assessment only considers potential in-combination effects in relation to effects on site integrity and does not address the potential for in-combination likely significant effects.</p> <p>Please explain this approach.</p>	<p>The Applicants' approach to including the in-combination assessment in the Appropriate Assessment (AA) stage is owed to the fact that the Proposed Development was deemed to potentially result in Likely Significant Effects (LSEs) alone, before considering potential cumulative impacts. Therefore, the in-combination assessment section was placed after the AA for simplicity. However, all pathways with potential cumulative impacts with other plans and projects have been considered in the table, not just the ones with LSEs alone and for which an AA was undertaken. For example, Table 7.1 considers impacts on SPA / Ramsar bird flight lines during construction, operation and decommissioning in-combination, an impact that was screened out for the Proposed Development alone. <u>In summary, the table does also consider impact pathways with potential in-combination LSEs.</u></p>
BIO.2.8	Applicants Anglo American	<p>In referring to York Potash construction works, the HRA Report Table 7.1 (page 72) [REP3-002] states that that the project is expected to be constructed in the next 1-2 years which is before any works on the Proposed Development begin.</p> <p>Please clarify the current timings for construction of the two projects.</p>	<p>Following the final investment decision and site establishment and enabling works, the Applicants expect to commence construction in 1Q 2024. The construction and commissioning programme is broadly expected to take 3 years, with operation forecast to commence late 2026. This excludes enabling works consented and executed by others and early site establishment activities.</p>
BIO.2.9	Applicants	<p>The HRA Report [REP3-002] refers to a Water Management Plan (paragraph 6.1.48) which would set out the measures to manage potential risks during construction. However, the Water Management Plan has not been included within the application documents and there is no reference to it in the dDCO.</p> <p>Please provide a version of the Water Management Plan at D6 or explain why it is not appropriate or necessary to do so.</p>	<p>The Framework CEMP [REP5-013], Table 5A-3, states that "The Final CEMP will be supported by a Water Management Plan (WMP) that would be included as a technical appendix. The WMP will provide greater detail regarding the mitigation to be implemented to protect the water environment from adverse impacts during construction." The WMP will therefore be appended to the Final CEMP which is secured through Requirement 16 in the DCO. The Final CEMP will be produced by the Contractor and would reflect the construction activities to be undertaken by the Contractor following Front End Engineering Design.</p>
BIO.2.10	Applicants NE EA	<p>Process water discharges (particularly nitrogen) have the potential to have adverse effects on the site integrity of the Teesmouth and Cleveland Coast Ramsar, SPA and SSSI. NE has raised its concerns regarding the issue of nutrient neutrality in its Written Representation [REP2-065], SoCG [REP1-010] and in its D4 response [REP4-040]. The EA has raised the potential issue of cumulative impacts of dissolved inorganic nitrogen on WFD and the site integrity of nearby designated sites in its SoCG [REP1-009]. The ExA notes the response to this matter in the Applicants' response to ISH4 [REP5-027].</p> <p>The Applicants, NE and EA are directed to a specific question on this issue below at WE.2.1.</p>	<p>Refer to the Applicants' response to WE.2.1.</p>

BIO.2.11	NE	<p>In its Written Representation NE [REP2-065] identified a concern about the potential impacts of installing rock armour protection, noting that this had not been addressed in the HRA. At D4 the Applicants responded, indicating that an assessment of installing rock armour protection had been included in an updated HRA Report submitted at D3 [REP3-002].</p> <p>NE is asked to comment on this aspect of the updated HRA Report and to indicate whether or not it addresses its concerns.</p>	N/A
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## 5.0 CLIMATE CHANGE

ExQ2	Question to:	Question:	Response
CC.2.1	Applicants	<p>Paragraph 21.3.4 of ES Chapter 21 Climate Change [APP-103] states that 'The baseline comprises existing carbon stock and sources of GHG [Greenhouse Gas] emissions within the boundary of the existing Site described in Chapter 3. The Site covers approximately 462 hectares of which the PCC Site has an area of approximately 42.5 ha.'</p> <p>With the reduction in site area, both confirmed and proposed, will the baseline need to be adjusted and what would be the consequences for the GHG assessment?</p>	<p>ES Chapter 21 Climate Change stated in Paragraph 21.3.6 that "It is assumed that there are no activities on site and that the area is fully under hardstanding". As such, the soil and vegetation carbon stocks can be assumed to be zero, both within the baseline assessment and for the Proposed Development. The reduction in site area, therefore, will not have any bearing on the existing GHG assessment.</p>
CC.2.2	Applicants	<p>Section 21.3 of the ES Chapter 21 Climate Change [APP-103] provides a GHG assessment. At paragraphs 21.3.15 and 21.3.16 it is explained that when calculating GHG emissions the seven Kyoto Protocol GHGs have been considered including CO<sub>2</sub>. The seven GHGs are broadly referred to within the assessment under an encompassing definition of 'GHG emissions' with the unit of tonnes CO<sub>2</sub> equivalent or megatonnes of CO<sub>2</sub> equivalent.</p> <p>The Applicants are asked to explain:</p> <ul style="list-style-type: none"> <li>i) Why does the assessment unit cover CO<sub>2</sub> equivalent and does this exclude the other Kyoto Protocol GHGs?</li> <li>ii) To what extent does the Proposed Development produce the other Kyoto Protocol GHGs?</li> <li>iii) Does the Proposed Development aim to mitigate the production of the other Kyoto Protocol GHGs in any way? If not, why not?</li> </ul>	<p>i) Emissions of all GHGs are conventionally expressed in terms of CO<sub>2</sub> equivalence. Each of the seven Kyoto Protocol GHGs has a different Global Warming Potential (GWP), expressed as a pure number relative to the warming potential of CO<sub>2</sub> which is always 1.</p> <p>The GWPs used to calculate the emissions factors published annually by the UK Government are consistent with those in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report.</p> <p>For example, CH<sub>4</sub> (methane) has a GWP of 25, so emissions of 1 tonne of CH<sub>4</sub> has the same warming potential as 25 tonnes of CO<sub>2</sub>. This would be expressed as 25 tonnes CO<sub>2</sub>e.</p> <p>Expressing emissions of all Kyoto Protocol GHGs in terms of CO<sub>2</sub> equivalence, therefore, is standard practice and explicitly includes all gases.</p> <p>ii) The use of CO<sub>2</sub> equivalence to express emissions of all Kyoto Protocol GHGs means that the extent to which the Proposed Development produces GHGs other than CO<sub>2</sub> is unclear, but as per the above and the following explanation this does not impact or undermine the assessment. Emissions factors published by the UK Government are routinely expressed in emissions of CO<sub>2</sub>e per unit of activity data; this simplifies the process of carrying out a GHG assessment, and also means that all emissions data can be presented in terms of a single unit that represents all GHGs.</p> <p>The key GHG mitigation measure within the Proposed Development is the capture of CO<sub>2</sub> in flue gases. This is an amine-based chemical process that only captures carbon dioxide rather than any other Kyoto Protocol GHGs that may be present in the flue gases.</p>

			<p>Emissions factors for the combustion of natural gas as published by the UK Government not only present a single factor in terms of CO<sub>2</sub>e (see explanation above) but also individual emissions factors for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O.</p> <p>Analysis of these factors indicates that CO<sub>2</sub> accounts for 99.81% of the overall warming effect, with CH<sub>4</sub> and N<sub>2</sub>O accounting for 0.14% and 0.05% respectively.</p> <p>iii) The disproportionate warming impact of CO<sub>2</sub> relative to other gases means that it is entirely appropriate for the carbon capture system fitted to the power station to address CO<sub>2</sub> only and not other gases that account for only a very marginal share of overall warming.</p> <p>The quantification of other mitigation measures embedded within the design of the Proposed Development have been calculated using emissions factors that explicitly include all Kyoto Protocol GHGs.</p>
CC.2.3	Applicants	<p>Paragraph 21.3.38 of ES Chapter 21 Climate Change [APP-103] comments that 6<sup>th</sup> carbon budget is currently under consideration by the UK Government. A note attached to Table 21-8 explains that it was published by the Climate Change Committee in November 2020 for the consideration of Government Ministers and that the budget was agreed by Parliament in April 2021 and due to be enshrined in legislation in June 2021.</p> <p>The Applicants are asked to provide an update in relation to the status of the 6<sup>th</sup> Carbon Budget and to explain any implications for the GHG assessment in ES Chapter 21.</p>	<p>The terms of the 6<sup>th</sup> Carbon Budget as ratified by the UK parliament are the same as the recommendations of the Committee on Climate Change. There are therefore no material implications for the GHG assessment for the Proposed Development from the 6<sup>th</sup> Carbon Budget moving from draft to approved status.</p> <p>The total permitted emissions figure for 6<sup>th</sup> Carbon Budget period published by the Climate Change Committee in November 2020 remains unchanged within the Carbon Budget Order 2021 as ratified by the UK Parliament in June 2021. The formal ratification, therefore, has no implications for the GHG assessment presented in ES Chapter 21.</p>
CC.2.4	Applicants	<p>ES Chapter 21 Climate Change [APP-103] sets out at paragraph 21.3.38ff the preliminary findings of the GHG impact assessment for the construction and commissioning, operation and decommissioning of the Proposed Development.</p> <p>i) With the evolution of construction and design proposals since the preparation of the ES do any of the assumptions in 21.3.39 and 21.3.40 need to be revised.</p> <p>ii) If so, what would the consequences be for the overall GHG assessment?</p>	<p>No significant change has resulted from the evolution of the design proposals. Where the design has evolved it has reduced the environmental effect of construction of the Proposed Development since a potential tunnel and potential new crossing have been removed from the DCO Application or the Applicants are seeking to remove them via the change request submitted at Deadline 6. Therefore the original assessment remains conservative. The design of the generating station is comparable to that assessed with a similar scale of CCGT with similar efficiency. The only change is that the design carbon capture rate being evaluated is up to 95% instead of 90%; therefore the original assessment remains conservative.</p> <p>Amended data for maximum daily vehicle movements during the construction stage have been provided at Deadline 3 [REP3-013] . This is the only change in input data that would have a quantitative impact on the GHG assessment presented within ES Chapter 21 Climate Change.</p>

			<p>Within the existing GHG assessment, emissions from such vehicle movements total 4,873 tonnes CO<sub>2</sub>e and account for 6.4% of construction emissions and 0.071% of overall lifetime emissions.</p> <p>Applying the amended data, the corresponding emissions figure for vehicle movements increases to 5,312 tonnes CO<sub>2</sub>e. The emissions from the construction phase increase by 0.58%, while the overall lifetime emissions for the Proposed Development increases by 0.006%. There is therefore no material impact on the overall GHG assessment.</p>
CC.2.5	Applicants	<p>At paragraph 21.3.50 of ES Chapter 21 Climate Change [APP-103] it is stated that the gross electrical output of the CCGT at 95% capture rate is slightly lower than that when achieving a 90% capture rate because the higher capture rate requires increased steam demand from the CCGT, thereby reducing the steam available to generate electricity.</p> <p>Should the DCO seek to ensure that the CCGT operates to maximise carbon capture rather than gross electrical output? If so, how should this be secured? If not, why not?</p>	<p>It is not considered appropriate for the DCO to specify the operating regime of the generating station and capture plant for a number of reasons:</p> <ul style="list-style-type: none"> <li>• The operation of the plant will be governed by the environmental permit and therefore this would duplicate regulatory controls;</li> <li>• The permit requires demonstration of the use of best available techniques (BAT) which safeguards the optimisation of the performance of the plant;</li> <li>• The plant will need to operate to meet demand and the exact operating performance to meet that demand is as yet unclear, and may evolve over the lifetime of the plant;</li> <li>• The design of the plant is not yet complete and is a First Of A Kind technology, so the operating parameters may need to change as the design progresses; and</li> </ul> <p>The EIA supporting the DCO application demonstrates no significant environmental effects result from the operation of the Proposed Development so additional controls within the DCO are not considered to be necessary.</p>
CC.2.6	Applicants	<p>Table 21-13 of ES Chapter 21 Climate Change [APP-103] shows that the Proposed Development operating with 90% carbon capture results in emissions of 41.2 tonnes of CO<sub>2</sub> per Gigawatt/ hour of electricity generated compared to 20.7 tonnes for 95% carbon captured (and 335.2 tonnes without carbon capture technology). The clear difference in emissions between 90% capture and 95% capture emphasises the importance of securing greater efficiency.</p> <p>How can the DCO ensure that a higher rate of efficiency is secured?</p>	<p>The Applicants consider that the response to CC2.5 is also applicable to this question. In short, it is neither necessary nor appropriate for the DCO to include provision to 'secure' the higher rate of efficiency. The appropriate rate of efficiency will be determined through the separate statutory regime regulating and controlling the operation of the plant (the environmental permit). As a matter of approach, therefore, it is not appropriate to seek to duplicate those controls through the DCO.</p> <p>Furthermore, the design of carbon capture plants at this scale, to be installed on CCGTs that will operate in dispatchable mode, has not yet been done before anywhere in the world. Placing additional regulatory restrictions based on the current level of design information is therefore considered to be premature, particularly as the EIA supporting the DCO application demonstrates no significant environmental effects result from the operation of the Proposed Development.</p>

CC.2.7	EA	<p>Paragraph 21.3.70 of ES Chapter 21 Climate Change [APP-103] refers to a request made by the EA to use renewable energy sources to offset parasitic loads. As grid electricity is only planned to be used during maintenance periods (approximately 14 days every year) and the national electricity grid is rapidly decarbonising, the Applicants considered that the benefits of this offsetting measure would not outweigh the costs.</p> <p>Is the EA content with this response?</p>	N/A
CC.2.8	Applicants	<p>Table 21-29 of ES Chapter 21 Climate Change [APP-103] presents Potential In-Combination Climate Change Impacts and Relevant Embedded Measures.</p> <p>On page one, do the responses correspond to headings? (Last five headings appear to result in six responses.)</p>	<p>A review of Table 21-29 of ES Chapter 21 Climate change shows that the columns on the first page of the table (page 21-49) from the third column onwards are misaligned with its corresponding headings from the third column from the left, i.e. Air Quality is under 'Project Phase' rather than 'Sensitive Receptor'. The misalignment has only affected the responses on the first page of the Table 21-29, the second and third pages of the table (pages 21-50 and 21-51) show the correct alignment. Appendix CC.2.8 shows the amended Table 21-29.</p>
CC.2.9	Applicants	<p>Please check the text at the start of paragraph 21.6.3 of ES Chapter 21 Climate Change [APP-103] and confirm whether there are any emissions.</p>	<p>A review of the Paragraph 21.6.2 of ES Chapter 21 Climate Change reveals the inclusion in error of additional text, together with a line break resulting in an extra Paragraph 21.6.3.</p> <p>The existing Paragraph 21.6.3 should be deleted, and the entirety of Paragraph 21.6.2 should have read:</p> <p><i>“As envisaged, if neighbouring industries connect to the CO<sub>2</sub> gathering network in the future and carbon can be captured from these existing sources, it is anticipated that the project as a whole could result in a net reduction in carbon emissions from current levels. Without including the offset of carbon emissions from off-site industry there will be some residual GHG emissions from the Proposed Development, mostly associated with the electricity requirement for the Compressor Station. However, this will result in a minor effect and is Not Significant. As set out in the assessment of operations (Section 21.3 GHG Avoidance), with the inclusion of carbon capture technology the Proposed Development will provide a low carbon source of energy generation.”</i></p> <p>The Applicants note that the overall significance of GHG impact has since been reassessed using updated guidance issued by IEMA.</p>
CC.2.10	Applicants	<p>Paragraph 21.4.25 of ES Chapter 21 Climate Change [APP-103] references the UK Climate Change Risk Assessment 2017. In January 2022 HM Government published UK Climate Change Risk Assessment 2022.</p>	<p>Carrying out the assessment of Climate Change Resilience (CCR) within ES Chapter 21 using the revised UK Climate Change Risk Assessment 2022 would not change the overall findings of the CCR in the ES Chapter. The</p>

		The Applicants are asked to explain whether using the revised risk assessment would change the findings of ES Chapter 21.	historic observations mentioned in Paragraph 21.4.5 are dependent on the data collected from the Met Office during the time of the assessment.
CC.2.11	Applicants	<p>In response to the Written Representation of Climate Emergency Planning and Policy [REP2-061] the Applicants noted (section 6 [REP3-012]) that the Institute for Environmental Management and Assessment (IEMA) published an updated version of the IEMA Guide Assessing Greenhouse Gas Emissions and Evaluating their Significance in February 2022 subsequent to the acceptance of the application and the assessment undertaken. The Applicants assert that while the update provides more granular guidance for contextualising the impact of GHG emissions from a project, it would not change the outcome of the assessment presented in ES Chapter 21 [APP-103]. Nevertheless, the Applicants stated that an updated assessment of GHG emissions applying the updated IEMA Guidance and including BEIS/Defra emissions factors would be submitted at D5.</p> <p>As no updated assessment was submitted at D5 the Applicants are asked to provide the assessment at D6.</p>	<p>A Summary report presenting a cumulative GHG assessment encompassing the Proposed Development and the construction and operation of the offshore transport and storage proposals was requested by the Examining Authority.</p> <p>This report has been submitted at Deadline 6 (Document Ref. 9.29) and includes an updated assessment of the significance of overall GHG impact of the Proposed Development which applies the amended IEMA guidance published in February 2022.</p> <p>This assessment concludes that the significance of GHG impact is Beneficial and Significant. This is on the basis that “<i>The project’s net GHG impacts are below zero and it causes a reduction in atmospheric concentration, whether directly or indirectly compared to the without-project baseline</i>” (emphasis added), on the assumption that the without project baseline is represented by the ongoing operation of an unabated combined cycle gas turbine of a similar size to that within the Proposed Development.</p>
CC.2.12	Applicants IPs	<p>In July 2022 the High Court handed down judgment in <i>R. (on the application of Friends of the Earth Ltd) v Secretary of State for the Business, Energy and Industrial Strategy</i> [2022] EWHC 1841 (Admin) which addressed the Secretary of State’s obligations under the Climate Change Act 2008 s13 and s14 in relation to the Government’s Net Zero Strategy.</p> <p>The Applicants and IPs are invited to comment on the relevance of this judgment in relation to the Proposed Development.</p>	<p>The case of <i>R. (on the application of Friends of the Earth Ltd) v Secretary of State for the Business, Energy and Industrial Strategy</i> does not affect the case or need for the Proposed Development and which remains, as set out in the Project Needs Statement [APP-069], urgent.</p> <p>The claimants challenged the Government’s actions pursuant to sections 13 and 14 of the Climate Change Act 2008 (the ‘CCA 2008’), in particular in publishing the Net Zero Strategy. Section 13 requires the Secretary of State to prepare proposals and policies as he considers enable carbon budgets set under the CCA 2008 to be met. Section 14 requires the Secretary of State to lay a report before Parliament setting out the proposals and policies for meeting carbon budgets. The Net Zero Strategy was published in October 2021, following the setting of the sixth carbon budget (2033 to 2037).</p> <p>Grounds 1 and 2 of the claim succeeded in part, as the High Court found that the information before the Secretary of State in considering the draft Net Zero Strategy was insufficient, because it did not include <i>inter alia</i> information on the contribution of individual policies to the quantified 95% reduction in emissions identified for the sixth carbon budget, nor adequate information to allow the Secretary of State to consider whether the remaining 5% in reductions could be met from the policies and proposals set out. Those</p>

			<p>matters meant that the relevant decisions did not comply with Sections 13 and 14 CCA 2008.</p> <p>It is important to note that the Court was not asked to consider the merits of the Net Zero Strategy, or any individual elements of that strategy. The issues raised by the claims were concerned with the adequacy of the information before the Secretary of State on the likely efficacy of the strategy as a whole.</p> <p>The High Court was not asked to, and has not quashed the October 2021 Net Zero Strategy (see paragraph 20 of the Judgment). The Net Zero Strategy therefore remains in place, and its policies, including those specifically supporting carbon capture and storage, are still in effect and are to be given full weight where relevant. There is nothing in the Judgment which could properly lead to reduced weight being given to any element of the Net Zero Strategy, or for concluding that the underlying urgency of action to put that strategy into effect is in any way reduced.</p> <p>The Secretary of State has been ordered lay a fresh report to Parliament (under section 14 CCA 2008) before 31 March 2023, addressing the matters in the High Court's judgment.</p> <p>A copy of the judgment is provided at Appendix CC.2.12. The key paragraphs are 16, 20, 22, 194, 196-7, 204, 206-217, 223, 23-242 and 248-260.</p>
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## 6.0 COMBINED AND CUMULATIVE EFFECTS

ExQ2	Question to:	Question:	Response
COM.2.1	Applicants	<p>Paragraphs 3.1-3.5 of STDC's Response to Comments on RRs [REP2-097c] references the Foundry and Long Acres sites.</p> <p>Have these projects been addressed in the combined and cumulative assessment?</p>	<p>The Applicants confirm that both schemes were included in the original cumulative assessment submitted as part of ES Vol I Chapter 24 Cumulative and Combined Effects [APP-106]:</p> <ul style="list-style-type: none"> <li>• The outline planning application for The Foundry (R/2020/0821/ESM) was listed as ID 85.</li> <li>• The outline planning application for Long Acre (R/2020/0822/ESM) was listed as ID 86.</li> </ul> <p>Both schemes were included on the short list since they comprised EIA development.</p>
COM.2.2	Applicants	<p>In its response to the hearings held during w/c 16 May 2022 [REP5-038], Orsted stated that it does consider there to be an obligation on the Applicants to carry out an assessment of the impacts of the Northern Endurance Partnership (NEP) project on Hornsea Project Four (HP4) as part of the DCO. Schedule 2 of the Infrastructure Planning (EIA) Regulations 2017 uses the term 'project' rather than development.</p> <p>i) Do the Applicants agree with the interpretation of 'project' in REP5-038? If not, please explain why.</p> <p>ii) Should the combined and cumulative effects of the wider NEP project and HP4 be assessed under the regulations? If not, please explain why.</p>	<p>i) The Applicants have submitted an ES in respect of the DCO application which assesses the likely significant environmental effects of the development that has been applied for in this DCO application (the "Proposed Development") and the offshore transport and storage project which forms part of the wider NEP project. This is explained in ES Volume 1 Chapter 24 (Cumulative and Combined Effects) [APP-106] and in Appendix 24C [AS-032]. This has been supplemented with an assessment of the impact of the offshore elements of the NEP Project on Hornsea Project Four (see Annex 1 to Applicants response to Orsted HP4 D3 Submission July 2022 [REP4-030]). The assessment undertaken recognises the relationship between the Proposed Development and the wider NEP project and carries out the assessment accordingly. The assessment in Chapter 24 includes a cumulative assessment in accordance with a zone of influence as advised in Advice Note Seventeen. The assessments undertaken recognise the relationship between the development proposed under the DCO and the wider elements of the NEP Project. The definition of 'project' does not therefore take matters further in this case as the ES already recognises the need to consider the impacts of the Proposed Development and wider NEP Project. The Applicants' position is more fully set out in Appendix 6 to the Written Summary of Oral Submissions for ISH1 [REP1-035].</p> <p>ii) As the DCO Order Limits are 150 km from the HS4 Order Limits, the HS4 development was screened out of the cumulative effects long list considered in ES Volume 1 Chapter 24 (Cumulative and Combined Effects) [APP-106]. Cumulative effects are however being considered in the offshore EIA for the NEP part of the project. The Applicants' position is that there are no likely significant combined and cumulative effects associated with the wider NEP project and Hornsea Project Four. The Applicants have also considered the environmental information submitted in support of</p>

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			the Hornsea Project Four examination and are not aware of any assessment that concludes that there would be any cumulative and in-combination effects associated with the wider NEP project and Hornsea Project Four.
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## 7.0 COMPULSORY ACQUISITION AND TEMPORARY POSSESSION

ExQ2	Question to:	Question:	Response
CA.2.1	Affected Persons (APs)	Are any APs aware of any further inaccuracies in the Book of Reference (BoR) [REP4-005], Statement of Reasons (SoR) [AS-141, AS-200] or Land Plans [AS-146]? If so, please set out what these are and provide the correct details.	N/A
CA.2.2	Applicants	Further to your response to ExQ1 CA.1.5 [REP2-016], can you provide an update to those access rights listed, and if there are any further land or rights acquisitions required before the Proposed Development could become operational?	The Applicants continue to work with CF Fertilisers Limited ("CFL"), Suez Recycling and Recovery UK Limited ("Suez"), and Sembcorp Utilities UK Limited ("Sembcorp") on voluntary agreements. These agreements include the associated access rights for the Proposed Development. The status of these agreements is summarised in the updated Compulsory Acquisition Schedule (Document Ref 9.5).
CA.2.3	Applicants	A 'Guide to Land Plan Plots' was provided in April [AS-143]. Can you ensure that an updated version is provided with the forthcoming proposed changes to the Order Limits at D6.	An updated version of the Guide to Land Plan Plots has been submitted at Deadline 6 (Document Ref 3.4).
CA.2.4	Applicants	At D5 an updated version of the Compulsory Acquisition (CA) Schedule [REP5-024]. Can you ensure this is updated at every deadline, providing a clean and tracked changed version.	The Applicants confirm that clean and tracked versions of the Compulsory Acquisition (CA) Schedule (Document Ref 9.5) will be submitted at future deadlines.
CA.2.5	Sembcorp Utilities (UK) Ltd	RR-034, REP1-055, REP2-098, REP2-099, REP3-025, REP4-036 and REP5-031 refer to concerns relating to Sembcorp's pipeline corridors amongst other matters. Can Sembcorp provide a response to the following: <ul style="list-style-type: none"> <li>i) Comment on the Applicants' post-hearing submission [Appendix 1, section 1.2 REP5-026] regarding a justification for corridor widths;</li> <li>ii) Comment on the Applicants' post-hearing note [Item 4, REP5-026] regarding duration of rights;</li> <li>iii) Comment on the relevant updates to the dDCO [REP5-002] which include Sembcorp as a consultee to a number of Requirements; and</li> <li>iv) Provide an update on discussions in relation to voluntary agreements.</li> </ul>	N/A
CA.2.6	STDC	STDC [RR-035, REP1-056, REP2-097 a) to c), REP3-026 and REP5-042] have commented on a range of land and CA issues. Could STDC provide a response to the following: <ul style="list-style-type: none"> <li>i) If a further SoCG is not being provided at D6/D7, please provide a general update to outstanding matters in terms of CA and Temporary Possession (TP);</li> <li>ii) Provide comments on the Applicants' post-hearing submission [Appendix 1, section 1.4, REP5-026] regarding a justification for corridor widths; and</li> <li>iii) Where possible, provide information on future development at Teesworks which you state would be 'impeded' by CA proposals for</li> </ul>	N/A

		the Proposed Development, and clarify what weight should the ExA give to such matters in balancing public benefit against private loss.	
CA.2.7	Applicants STDC	<p>STDC continue to raise concerns regarding the TP of Plots 274 and 279. The post-hearing note for the second CA Hearing (CAH2) [Item 4, REP5-026] refers to further discussions taking place in early August regarding construction access issues.</p> <p>Could STDC and the Applicants:</p> <ul style="list-style-type: none"> <li>i) Submit an update on the dispute relating to Plots 274 and 279 and the proposed construction access from Tees Dock Road at D6;</li> <li>ii) If the Order Limits require amendment to include the alternative route suggested by STDC [Appendix 2, REP2-097a], provide a draft timetable for such changes to be submitted and agreed within the Examination timetable; and</li> <li>iii) Clarify if/ why the ExA need to be satisfied that the Applicants have demonstrated a reasonable alternative (via Lackenby Gate), given that the proposal relates to TP and not CA?</li> </ul>	<ul style="list-style-type: none"> <li>i) The Applicants and STDC have held further constructive discussions on the main option agreement since CAH2 and are progressing towards a voluntary agreement with STDC. Upon entering into a legally binding agreement with STDC, the Applicants will have secured an alternative access via the Lackenby Gate and subsequently propose to remove plots 274 &amp; 279 from the Order Limits as they will no longer be required once the alternative access is secured.</li> <li>ii) The Applicants do not intend to amend the Order Limits to include the alternative route via Lackenby Gate. As noted above the Applicants propose to secure the required access rights through a voluntary legal agreement with STDC.</li> <li>iii) The Applicants do not consider that the ExA needs to be satisfied that there are no reasonable alternatives to the proposed temporary possession powers over plots 274 and 279 (eg via Lackenby Gate). The Applicants do not propose to exercise powers of compulsory acquisition over those plots but rather temporary possession powers for construction access. .. The access proposed in the DCO Application (via plots 274 and 279) provides an appropriate and direct route for construction traffic which is acceptable in planning terms. The fact that an alternative route may exist does not render the proposed access route unacceptable or inappropriate. However, as noted above, the Applicants are discussing terms with STDC to enable the use of an alternative access route which, if secured, will allow plots 274 and 279 to be removed from the Order Limits.</li> </ul>
CA.2.8	Applicants	<p>STDC in various submissions [RR-035, REP1-056, REP2-097 a) to c), REP3-026 and REP5-042] have raised concerns that future development at Teesworks may be impeded by the CA/ TP proposals to enable the Proposed Development. Similar arguments have been raised by other APs including North Tees Group [RR-016, RR-022, REP2-070], PD Teesport [RR-033 and REP2-093] and CATS North Sea Limited [REP2-081 and REP4-032].</p> <p>Could the Applicants:</p> <ul style="list-style-type: none"> <li>i) Explain if there is any provision in relevant legislation or policy relating to the effect of CA/TP proposals for a Nationally Significant Infrastructure Project (NSIP) on future developments or investment (including those which are not yet the subject of a planning application or DCO or other type of application); and</li> <li>ii) Indicate what weight should the ExA give to such future projects when balancing public benefit against private loss in their recommendations to the SoS on CA matters.</li> </ul>	<p><u>Relevant legislation:</u></p> <p>In addition to establishing the purpose for which compulsory acquisition is sought, section 122(3) requires the Secretary of State to be satisfied that there is a compelling case in the public interest for the land to be acquired compulsorily. For this condition to be met, the Secretary of State must undertake a balancing exercise between the public benefits that would be derived from compulsory acquisition and the private loss that would be suffered by those whose land is to be acquired. Part of that “balancing exercise” would include consideration of private loss related to loss of development opportunities.</p> <p>The <i>Guidance related to procedures for the compulsory acquisition of land</i> (DCLG, Sept 2013) explains that “<i>in practice there is likely to be some overlap between the factors that the Secretary of State must have regard to when considering whether to grant development consent, and the factors that must be taken into account when considering whether to authorise any proposed compulsory acquisition of land</i>”. That guidance is relevant in considering the issues of weight at ii) below.</p>

			<p>Regulation 14(2)(f) and Schedule 4 of the Infrastructure Planning (EIA) Regulations 2017 may also be relevant. Read together, they require environmental assessment of likely significant effects on factors including “population”, “land (for example land take)” and “material assets”.</p> <p><u>Relevant policy</u></p> <p>Relevant policy is set out in NPS EN-1 section 5.10, particularly the following paragraphs which include consideration of the impacts of a project on other proposed projects (including other projects contained in an adopted or proposed development plan):</p> <ul style="list-style-type: none"> <li>- Paragraphs 5.10.5: <i>The ES (see Section 4.2) should identify existing and proposed land uses near the project, any effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing. Applicants should also assess any effects of precluding a new development or use proposed in the development plan.</i></li> <li>- Paragraph 5.10.7: <i>During any pre-application discussions with the applicant the LPA should identify any concerns it has about the impacts of the application on land use, having regard to the development plan and relevant applications and including, where relevant, whether it agrees with any independent assessment that the land is surplus to requirements.</i></li> <li>- Paragraph 5.10.13: <i>Where the project conflicts with a proposal in a development plan, the IPC should take account of the stage which the development plan document in England or local development plan in Wales has reached in deciding what weight to give to the plan for the purposes of determining the planning significance of what is replaced, prevented or precluded. The closer the development plan document in England or local development plan in Wales is to being adopted by the LPA, the greater weight which can be attached to it.</i></li> </ul> <p>In balancing the public benefits arising from the Project against private loss arising from compulsory acquisition, the weight the ExA should attribute to any future projects will depend on a number of factors, including the prospect of those projects coming forward (which involves consideration of a range of planning related and other matters); the public benefits that would arise from any such projects; and the risk of those other projects being frustrated by the grant of compulsory acquisition powers in the present case. As such, in each case it would be necessary to consider:</p> <ul style="list-style-type: none"> <li>- The extent to which the other project is worked up and can be specifically identified and scoped, or whether it is an inchoate aspiration.</li> <li>- Does the other project benefit from planning permission or a development consent order?</li> </ul>
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			<ul style="list-style-type: none"> <li>- If not, has an application been submitted and what stage has it reached in the determination process (e.g. has the application been validated or accepted, and has it been through a further process of scrutiny by the public or statutory bodies)?</li> <li>- Is the other project identified in an extant or emerging development plan?</li> <li>- If it is an emerging development plan, what stage has that plan reached (e.g. has it been through public consultation)?</li> <li>- Is the other project consistent with other Government policy and strategies (e.g. energy, housing or employment policy or strategies)?</li> <li>- Is the other project nationally significant, or regionally significant (as evidenced by legislative requirements or national or regional planning policy)?</li> <li>- Are there are known obstacles to the implementation of the other project (e.g. land control or viability issues)?</li> <li>- Could the public interest objectives to be served by the other project be addressed via an alternative scheme or an alternative site?</li> </ul> <p>The weight to be afforded to alleged impacts on other projects would also be affected by the extent to which it had been demonstrated in evidence submitted by the relevant interested party that there would be a clear adverse effect on a particular project, that could not satisfactorily be addressed through optioneering and/or design development, or (where relevant) the operation of protective provisions and other control mechanisms. Absent such evidence, the weight that could properly be attached to impact of the proposed compulsory acquisition on other future projects is necessarily very limited.</p> <p>With respect to the NZT project, assertions have been made by interested parties regarding alleged impacts on future development proposals but that has not been supported by any clear evidence that demonstrates that the projects will come forward; that the proposed compulsory acquisition would adversely affect their delivery or undermine the public benefits which they seek to deliver; or that any impacts could not be appropriately avoided or addressed through design, optioneering or the operation of protective provisions. Specifically with respect to STDC, the Applicants are satisfied that the protective provisions are robust and ensure that STDC has certainty and a reasonable degree of influence over when and where development must come forward in tandem with current or future development proposals. That includes measures that require the diversion of infrastructure to accommodate development of new business / industrial use which benefit from planning permission. It remains unclear to the Applicants how the NZT project would in practice frustrate any development proposed by STDC, or any other development which may or may not come forward across the Teesworks site.</p> <p>The same principles apply to the submissions by other interested parties, where future development proposals appear to be aspirational at this stage (i.e.</p>
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			<p>they do not benefit from planning permission or have little or no specific policy support) or, even where there is a reasonable prospect of a development proposal coming forward, there are measures proposed by the Applicants (including by way of project design and/or protective provisions) that would safeguard that proposal. In these scenarios the weight that should be afforded to private losses associated with alternative development proposals is necessarily very limited.</p> <p>Other interested parties who have asserted an impact on development proposals from the proposed CA powers include CF Fertiliser Limited (CFL), North Tees Group (NTG), CATS North Sea Limited (CNSL) and PD Teesport Limited (PDT).</p> <p>CFL proposes a natural gas pipeline within parts of the pipeline corridor in North Tees. The Applicants are not aware that the proposed pipeline benefits from planning permission or when it is proposed or likely to come forward, but have been working with CFL to enable the Proposed Development and CFL's pipeline (if it progresses) to both be constructed and co-exist. CFL has received and reviewed a technical report generated by the Applicants that identifies the potential interface points between the two proposed pipelines and concludes that there would be minimal interaction between the two assets. The Applicants have proposed protective provisions to mitigate any potential impact on CFL and its potential pipeline proposal. Those protective provisions ensure that the proposed compulsory acquisition powers will not frustrate or adversely affect CFL's potential natural gas pipeline.</p> <p>NTG has not provided any evidence of the development proposals that the exercise of compulsory acquisition powers is alleged to affect. It has not identified an existing consent or proposed application for any such proposals or identified any specific development plan policies which support any such development proposals. The Applicants propose changes at Deadline 6 to reduce the area of land take from NTG (in response to discussions with them), and have also included protective provisions within the Draft DCO (Document Ref. 2.1) for the benefit of the NTG, to reduce and mitigate such remaining impact as there may be on NTG's private interests. In all the circumstances, the Applicants consider that very limited weight should be afforded to the alleged impacts of the proposed compulsory acquisition powers on future projects proposed by NGT.</p> <p>CNSL has identified that its H2 NorthEast blue hydrogen project is proposed to come forward and that the CA powers sought would impact those proposals, in particular the AGI (Work No. 2B) on Plot 112. CATS has not identified the location or layout of the proposed H2 NorthEast project; progress on seeking or securing consent nor other specific details in relation to the project. As noted previously and in response to CA.2.9 below, the Applicants continue to work with CATS in relation to the design of the AGI and seeking to ensure that the Proposed Development and CNSL's proposals can come forward together. In recent technical meetings both parties have held preliminary discussions on</p>
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			<p>how both developments could coexist and how Work No. 2A and 2B could be designed to minimise impact on CNSL's H2 NorthEast project. The Applicants have proposed protective provisions to mitigate any impact on CNSL. As such, the Applicants consider that very limited weight should be afforded to the alleged impacts of the proposed compulsory acquisition powers on CNSL's proposed H2 NorthEast project.</p> <p>PDT have raised concerned in respect of the impact of the compulsory acquisition powers on their consented Northern Gateway development. Following the identification of the overlap between the Order Limits and PDT's proposed development, the Applicants reduced the Order Limits in that area as part of the change request submitted on 28 April 2022. This request was accepted by the ExA [PD-010] such that any potential impact on PDT's proposals arising from the Proposed Development has been removed.</p> <p>The position of less developed or inchoate proposals and those where the impacts of the Proposed Development are significantly mitigated through proposed protective provisions must be contrasted with the degree of certainty and weight that attaches to the public interest benefits of the NZT project. The Applicants direct the Examining Authority to the SoR and the Applicants Summary of Oral Case – Compulsory Acquisition Hearing 1 (CAH1) [REP1-037] for justification as to the compelling case in the public interest for compulsory acquisition of land. In summary, there are substantial public interest benefits that would be realised by granting the powers that are sought, and thereby enabling the Proposed Development to be delivered. These are set out in further detail in the Project Need Statement [AS-015] and the updated Planning Statement submitted at Deadline 1 [REP1-003]. The need case and the associated public benefits of meeting that need have been further underlined by the subsequent publication of the Government policy documents referred to in Applicants Summary of Oral Case Issue Specific Hearing 1 (ISH1) [REP1-035].</p>
CA.2.9	Applicants PD Teesport CATS North Sea Limited	<p>PD Teesport [RR-033 and REP2-093] and CATS North Sea Limited [REP2-081, REP4-032] have raised the issue of a potential alternative to Plot 112. The Applicants provided a response relating to technical feasibility of the alternative plot [REP3-012, REP5-028].</p> <ul style="list-style-type: none"> <li>i) Can CATS North Sea Limited and/or PD Teesport provide comment on the Applicants' response [REP3-012 and REP5-028] and confirm if they are satisfied or have any further concerns or comments on this matter;</li> <li>ii) Can the Applicants, CATS North Sea Limited and/or PD Teesport confirm that if a sub-lease is agreed voluntarily, would the issue of a preferred alternative fall away?; and</li> <li>iii) Can the Applicants provide any further comments and reasoning for not pursuing the alternative suggested.</li> </ul>	<ul style="list-style-type: none"> <li>ii)The Applicants continue to work with CATS North Sea Limited ("CNSL") on a voluntary agreement for the AGI at plot 112. If a sub-lease is agreed voluntarily with CNSL and PDT then the issue of a preferred alternative would fall away.</li> <li>iii)The Applicants' position outlined in REP3-012 and REP5-028 remains unchanged. The Applicants are continuing to work with CNSL on both technical and commercial matters to address their concerns with the use of plot 112.</li> </ul>

CA.2.10	Anglo American	Could Anglo American provide comments on the Applicants' post-hearing submission [Appendix 1, section 1.3 REP5-026] regarding a justification for corridor widths.	N/A
CA.2.11	Applicants	<p>The D5 response from North Sea Midstream Partners (Teesside Gas Processing Plant Limited and Teesside Gas &amp; Liquids Processing) (NSMP) [REP5-041] refers to a lack of engagement with Affected Persons (APs) and the late nature of discussions regarding alternatives to compulsory acquisition, regarding access to plots 105, 110 and 112.</p> <p>Can the Applicants:</p> <ul style="list-style-type: none"> <li>i) Explain the situation and give assurances that attention is now being given to engagement with NSMP with a view to resolving concerns set out in their response;</li> <li>ii) Provide an update on discussions regarding an alternative access from Seal Sands Road and confirm whether additional land would be required for such access; and</li> <li>iii) Confirm that a SoCG will be drafted with NSMP, and the expected deadline for submission.</li> </ul>	<ul style="list-style-type: none"> <li>i) The Applicants are now in regular discussion with NSMP and have shared draft HoTs with them. The Applicants remain confident that given the level of engagement that agreement can be reached within Examination.</li> <li>ii) Within the Order Limits the Applicants have secured the required land to access for Work No. 2A. As part of the voluntary agreement with NSMP, the Applicants draft HoTs include the full access of plot 105. This is outlined in 5.1.1 of NSMP Deadline 5 submission [REP5-041]. These terms are subject to further discussion between the parties.</li> <li>iii) A draft SoCG has been submitted at Deadline 6 (Document Ref 8.37).</li> </ul>
CA.2.12	North Tees Group	Your D5 submission [REP5-035] refers to the delayed response to ExQ1 CA.1.8. Please ensure the required information is submitted no later than D7.	N/A
CA.2.13	All APs	Do any APs have any concerns that they have not yet raised about the legitimacy, proportionality or necessity of the CA or TP powers sought by the Applicant that would affect land that they own or have an interest in?	N/A
CA.2.14	Applicants	Ensure any name changes, changes in rights and any further information in relation to unregistered/unknown plots are accounted for in the Book of Reference and noted in the CA Schedule	The Applicants note the ExA's request and confirm that the Book of Reference and CA Schedule will be updated where required.
CA.2.15	<p>BT Telecommunications plc</p> <p>Vodafone Limited</p> <p>Cornerstone Telecommunications Infrastructure Limited</p> <p>Telefonica</p> <p>Applicants</p>	<p>The Applicants confirmed at Appendix 2 of their Written Summary of Oral Submissions for CAH2 [REP5-026] that a number of electronic communications code operators may have apparatus within the Order Limits and the Book of Reference will be updated at D6 pending receipt of further information. A record of the consultation carried out for each specific operator is set out at section 2 of Appendix 2, and a list of those issued a request for information is at Appendix 2A.</p> <p>Can each of the operators listed:</p> <ul style="list-style-type: none"> <li>i) Confirm whether they have any assets or interests within the Order Limits and if so, provide details of their location; and</li> <li>ii) Confirm if they are satisfied with the draft protective provisions set out in Part 2 of Schedule 12 of the dDCO, and if not satisfied provide comments accordingly.</li> </ul> <p>Can the Applicants confirm that if the listed operators confirm (or fail to respond) that they do not have any assets or interests within the Order Limits, would Part 2 of Schedule 12 be deleted from the dDCO?</p>	<p>The Applicants have only received further information from BT Telecommunications plc, and nothing from the other operators on any assets and interests within the Order Limits.</p> <p>BT confirmed the location of two operational sites and which are located outside the Order limits (and which are not therefore relevant). BT also confirmed that apparatus within the Order limits would be operated by BT Openreach - the Applicants have included Openreach within the updated Book of Reference submitted at Deadline 6 (Document Ref. 3.1) for those plots where the Applicants understand BT/Openreach has apparatus, where it has received information from other sources (such as land owners).</p> <p>As they are now listed in the Book of Reference, Part 2 of Schedule 12 will not be deleted from the Draft Order (Document Ref. 2.1). BT has not provided the Applicants with any comments on the protective provisions. Part 2 of Schedule 12 should also be retained to protect any other telecommunications operator with apparatus and which the Applicants are not aware of.</p>

CA.2.16	All APs	<p>The Applicants' Written Summary of Oral Submissions for CAH2 [Item 7, REP5-026] confirms the statutory undertakers to whom standard protective provisions set out in Parts 1 and 3 of Schedule 12 of the dDCO would apply to, and bespoke protective provisions at Parts 10, 11, 13, 25 and 26 which apply to statutory undertakers who are listed in the Book of Reference. Are any APs aware of any additional statutory undertakers to whom protective provisions should apply?</p>	N/A
CA.2.17	Applicants	<p>Paragraph 9.1.31 of the Statement of Reasons [AS-141] refers to interactions with other privately owned or operated apparatus and states that Schedule 12 of the dDCO would also apply to any other mains, pipelines and cables that would not otherwise fall within the standard drafting and are not covered by bespoke PPs.</p> <p>Can you respond to the following:</p> <ul style="list-style-type: none"> <li>i) Such privately owned apparatus is not covered by Article 33 of the dDCO (and instead by Article 26 'Private Rights')?</li> <li>ii) Section 138 of the PA2008 does not apply to the ExA's considerations in respect of such private operators?</li> <li>iii) What consideration should the ExA give to such matters relating to private apparatus?</li> </ul>	<p>i) It is correct that Article 33 of the dDCO does not cover privately owned apparatus. Article 33 (statutory undertakers etc) specifically authorises the undertaker to exercise powers to acquire compulsorily any of the Order land belonging to statutory undertakers, or to extinguish or suspend (or create new) rights or restrictions in any of the Order land belonging to statutory undertakers.</p> <p>Article 26 serves a different purpose. It authorises:</p> <ol style="list-style-type: none"> <li>1. the extinguishment of "private rights and restrictions" over the Order land where the undertaker permanently acquires the freehold; and</li> <li>2. the suspension of "private rights and restrictions" over the Order land either permanently (where the undertaker is acquiring rights or creating restrictions) or temporarily (for the period where the undertaker is taking temporary possession).</li> </ol> <p>Article 26(6) specifies that Article 26 does not apply in relation to any right to which section 138 (extinguishment of rights, and removal of apparatus, of statutory undertakers etc.) of the 2008 Act or Article 33 applies. The effect is that the meaning of "private rights and restrictions" under Article 26 (and the related powers) applies generally but excludes statutory undertakers.</p> <p>Article 26(9) defines "private rights" for the purposes of Article 26 being: <i>any right of way, trust, incident, easement, liberty, privilege, restrictions right or advantage annexed to land and adversely affecting other land, including any natural right to support and include restrictions as to the user of land arising by virtue of a contract, agreement or undertaking having that effect.</i></p> <p>As set out in paragraph 9.1.31 of the Statement of Reasons [AS-141], the protective provisions typically included for the protection of apparatus belonging to statutory undertakers have been amended so that they apply to any other mains, pipelines and cables that would not otherwise fall within the terms of the standard drafting, and which are not otherwise protected by any of the bespoke protective provisions for third parties identified in Schedule 12. The Examining Authority is specifically directed to limb e) of the definition of "utility undertaker" under Part 1 of Schedule 12. This ensures that those with interests in privately owned apparatus benefit from appropriate protections under the Order.</p>



			<p>ii) It is correct that section 138 of the PA2008 does not apply to the ExA's considerations in respect of private operators. S.138 is only engaged in respect of statutory undertakers. It follows that the ExA and SoS must only consider whether the extinguishment of rights and removal of apparatus of <i>statutory undertakers</i> is necessary for the purpose of carrying out the development to which the Order relates (s138(4)). The extinguishment of rights and removal of apparatus of private operators does not engage S.138 .</p> <p>iii) The extinguishment and suspension of private rights must be taken into account by the ExA and SoS in determining whether there is a compelling case in the public interest for granting powers of compulsory acquisition under s122(3) of the Planning Act 2008.</p> <p>Paragraph 14 of the <i>Guidance related to procedures for the compulsory acquisition of land</i> (September 2013) explains that “<i>In determining where the balance of public interest lies, the Secretary of State will weigh up the public benefits that a scheme will bring against any private loss to those affected by compulsory acquisition</i>”.</p> <p>The extinguishment and suspension of private rights relating to apparatus is part of the “private loss” that must be considered for the purposes of S122(3) in balancing the public benefits of authorising compulsory acquisition against private loss.. The Applicants have identified the substantial public benefits resulting from the Proposed Development which justify the exercise of compulsory acquisition powers in various previous submissions which are not repeated here. The weight to be afforded to the loss of private rights must also be weighed in the balance, taking account of the protections afforded to private operators under Schedule 12 of the DCO, whether through bespoke provisions included in Schedule 12 for the particular party or through the general protective provisions in Part 1 of Schedule 12.</p>
CA.2.18	Applicants	Are any other additional bespoke protective provisions likely to be added before the end of the Examination?	The Applicants anticipate adding one further set of bespoke protective provisions in Schedule 12 to the DCO, for the benefit of Teesside Gas & Liquids Processing Limited and Teesside Gas Processing Plant Limited. These protective provisions have previously been issued to TGLP / TGPP and the parties are continuing negotiations in relation to them.
CA.2.19	Applicants	Provide an update on the progress made regarding obtaining Crown consent and whether this is likely to be achieved before the close of the Examination. Please note that should this matter not be resolved the ExA will require a submission setting out how the Proposed Development could proceed without Crown land by no later than D9.	The Applicants have been engaging proactively with the Crown and believe sufficient progress has been made for the Crown to now proceed with granting s135 consent. The Applicants have written to the Crown to request details of any remaining concerns the Crown has which would prevent the consent being forthcoming. The Examining Authority's comments in relation to a submission potentially being required by Deadline 9 is noted.

CA.2.20	Applicants	Provide an update to the Funding Statement to reflect any changes to the Order Limits.	The changes made to the Order Limits have been as a result of removing optionality or a reduction in land take following design development and stakeholder engagement. The former has not resulted in a reduction to the Proposed Development cost or associated land costs, since the total development cost only accounted for single options (as only one option would have actually been developed). The latter has a minor impact on the associated land costs but in the context of the overall development cost this is insignificant, a reduction and there is no update required.
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## 8.0 DESIGN LANDSCAPE AND VISUAL

ExQ2	Question to:	Question:	Response:
DLV.2.1	Applicants RCBC	<p>At ISH4 [EV8-001 to 006], the ExA highlighted the increasing emphasis on good design, which is not only set out in National Policy Statements (NPSs) but in a variety of other national publications and in relation to other NSIPs. The ExA pointed out the recommendations in the National Infrastructure Commission Design Principles Document for a design champion, and use of design review panels. Reference was made to 'iconic' structures and a 'strong visual beacon' as noted in the Teesworks Design Guide [REP2-055] design typology C5 (p.39). The ExA noted that the PCC site could be considered a 'gateway' site and put to the Applicants that its prominence requires further thought and justification. The site has the potential to become a local landmark as the blast furnace has been, and that this is highlighted by its exposed coastal location and the 'first of a kind' status of the Proposed Development.</p> <p>Whilst the ExA acknowledge the reference to the Design and Access Statement (DAS) in R3 in the D5 update to the dDCO [REP5-002], the ISH4 post-hearing note for Item 3 does not appear to confirm either way whether an amendment to R3 is necessary in terms of use of a design panel or design champion. Furthermore, no further consideration appears to have been given to the 'iconic' or 'local landmark' potential of the PCC site. The Applicants' representative Mr Turnbull indicated that it will consist of 'simple' structures, which blend into the skyline rather than stand out from it, which is at odds with the above and the comments from RCBC at the hearing.</p> <p>Can the Applicants provide further comments on the above, in particular:</p> <ul style="list-style-type: none"> <li>i) If: a) use of a design panel, design champion or consideration of an alternative approach to securing good design; and b) 'landmark' type structures are not considered necessary or appropriate, could you provide a more detailed explanation as to why not; and</li> <li>ii) Provide an outline for a post-consent design review process.</li> </ul> <p>Can RCBC provide comment:</p> <ul style="list-style-type: none"> <li>i) Do the amendments to R3 in terms of reference to the DAS provide a sufficient basis to secure a high quality detailed design of the development of the PCC site, or to encourage a 'landmark' type structure?</li> <li>ii) Does RCBC have the necessary expertise and resources to take on the design approval post-consent, or would an external design review be necessary? If so, indicate what additional support you believe would be required and from whom such support should come.</li> </ul>	<p>i)</p> <ul style="list-style-type: none"> <li>a. The Applicants do not consider the use of a design panel, champion or alternative approach is proportionate or necessary to secure 'good design' in respect of the Proposed Development.</li> </ul> <p>Section 5 of the Design and Access Statement ('DAS') explains why the Applicants need to retain flexibility in the design of the Proposed Development, while Section 6 of the DAS clearly sets out the rationale for the Applicants' approach to the design of the Proposed Development and how the design developed during the pre-application stage. During the Stage 2 (statutory) pre-application consultation different design options were presented to the local community and other stakeholders in terms of building form, materials and colour. Limited feedback was received at Stage 2 in respect of the design options presented and no strong preference was expressed for any particular design approach.</p> <p>The PCC Site sits within an industrial setting, albeit one that is in the process of undergoing significant change, with the large buildings and structures associated with the former Redcar Steel Works gradually being demolished to facilitate the regeneration of the Teesworks site. The PCC Site (which forms part of the Northern Industrial Zone) is not identified as a 'Gateway Plot' within the Teesworks Design Guide (defined as a development plot that has a significant visible frontage onto the infrastructure corridor of other primary route) nor is it identified as such within the South Tees SPD, although it is acknowledged that the Site lies adjacent to and is visible from parts of South Gare and Coatham Dunes and Sands.</p> <p>In view of the limited feedback received in respect of design at Stage 2, and the PCC Site's industrialised setting, it is considered that the functional approach adopted to the design of the Proposed Development is appropriate. That design has taken account of the Teesworks Design Guide and the Large-Scale Industrial Operations Typology. Section C.5 of the Design Guide recognises that in design terms, such developments will be primarily driven by the functional requirements of the industrial processes. In the case of the Proposed Development, the main buildings and structures have been grouped together and set back from the site boundaries (in line with the Large-Scale Industrial Operations Typology), which assists in reducing its landscape and visual effects upon South</p>

			<p>Gare and Coatham Dunes and Sands. Furthermore, in line with the Typology a number of possible solutions for the external finishes of the buildings/structures will be considered in the final design, with lighter colours used to soften the appearance of the Proposed Development against the sky and sea. This is considered appropriate given the ongoing removal of the large-scale Steel Works buildings/structures, the fact that the Teesworks site will be redeveloped with a range of less dominating buildings, combined with the aspiration in the Design Guide for the environmental enhancement of South Gare, Coatham Dunes and Sands.</p> <p>It is therefore considered that the Proposed Development represents 'good design' that takes account of the Teesworks Design Guide and respects its surroundings.</p> <p>The post-consent design review process is governed by requirement 3 'Detailed design' of the draft DCO [REP5-002]. It provides the relevant planning authority, in this case, Redcar and Cleveland Borough Council, with the ability to control the final design of the Proposed Development, including its external appearance (colour, materials and surfaces finishes). The requirement explicitly states that RCBC must consult STDC on the details submitted prior to their approval by the planning authority, which will provide STDC with the opportunity to advise and comment upon the compatibility of the design with the Teesworks Design Guide. It will also be open to RCBC to report the submitted details to planning committee for final approval. It is therefore considered that Requirement 3 provides a sufficient degree of control over the final design of the Proposed Development and that a design panel or champion is not required. Furthermore, RCBC has already indicated that it is content that Requirement 3 is sufficient for the purposes of securing the detailed design of the Proposed Development and this is detailed in the Statement of Common Ground [REP1-026].</p> <p>b. The Applicants do not consider that the use of 'landmark' type structures are necessary or appropriate to deliver good design at the PCC Site. Reference is made to the Blast Furnace at the former Redcar Steel Works being a local landmark and that it appears no further consideration has been given to the 'iconic' or 'local landmark' potential of the PCC Site. It is important to recognise that the Blast Furnace was not designed or constructed to be a 'local landmark' or 'iconic'. It formed a functional part of the Steel Works and this was reflected in its design and appearance. It has become a landmark and iconic due to its prominence with the local landscape for a number of decades and its historic association with steel making in the Redcar area. However, the Blast Furnace will be removed as part of the redevelopment of the Teesworks site, as indeed have a number of the other large buildings and structures at the former Steel Works. As such, the character of the local landscape is undergoing</p>
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			<p>significant change with the removal of the large Steel Works structures and there will be further significant change in the future as the Teesworks site is gradually redeveloped, which will affect the way that the Proposed Development is perceived within the area. Those other developments will provide the opportunity to create new local landmarks subject to the Teesworks Design Guide, if appropriate.</p> <p>The PCC Site lies adjacent to and is visible from parts of South Gare and Coatham Dunes and Sands. The removal of the former Steel Works buildings and structures and the redevelopment of the Teesworks site provides the opportunity to reduce the landscape and visual effects of development on South Gare and Coatham Dunes and Sands, consistent with aspiration in the Design Guide for the environmental enhancement of these areas. As confirmed above, the design of the PCC Site has taken account of the Design Guide and its Large-Scale Industrial Operations Typology, which recognises (Section C.5 of the Design Guide) that the design of such developments will be largely driven by the functional requirements of the industrial processes involved. The main buildings and structures at the PCC Site have been grouped together and set well back from the site boundaries (in line with the Typology), which, along with the proposed approach to materials, will assist in reducing its landscape and visual effects upon the adjacent areas, which are used for recreation. An attempt to introduce 'landmark' elements would increase the prominence of the Proposed Development at a time when large, main-made, dominating influences are being removed from the local landscape.</p> <p>ii) As set out above, it is considered that Requirement 3 'Detailed design' of the draft DCO [REP5-002] provides sufficient post-consent control of the detailed design of the Proposed Development.</p> <p>Requirement 3 provides RCBC with the ability to control the final design of the Proposed Development, including its external appearance. The requirement explicitly states that RCBC must consult STDC on the details submitted prior to their approval, which will provide STDC with the opportunity to advise and comment upon the design details within the context of the Teesworks Design Guide. It will also be open to RCBC to report the submitted details to planning committee for final approval. It is therefore considered that Requirement 3 provides a sufficient post-consent control of the design of the Proposed Development.</p>
DLV.2.2	Applicants	<p>Paragraph 4.5.3 of NPS EN-1 seeks to ensure that energy infrastructure developments are sustainable and as attractive, durable and adaptable as they can be, taking into account both functionality (including fitness for purpose and sustainability) and aesthetics.</p> <p>Could the Applicants explain, in relation to fitness for purpose, sustainability, durability and adaptability, how good design for the PCC site has been demonstrated.</p>	<p><b>Fitness for purpose:</b></p> <p>As confirmed in response to DLV.2.1, the Applicants have taken a functional approach to the design of the PCC Site. This not only reflects the limited feedback on design received during the Stage 2 pre-application consultation and the PCC Site's industrialised setting, but also technical, engineering, environmental and safety considerations. A key consideration has been that</p>

			<p>the Proposed Development is fit for purpose. However, as underlined in response to DLV.2.1, the design of the Proposed Development has still had regard to the Teesworks Design Guide and the Large-Scale Industrial Operations Typology at Section C.5 of the Design Guide.</p> <p>The Proposed Development has been designed so that the PCC Site will have a minimum design life of 25 years, although it is likely that it will operate for a longer period. The various pipelines will have a minimum design life of 40 years. The detailed design of the Proposed Development will be finalised following the Front End Engineering Design ('FEED') stage and will be the responsibility of the appointed Engineering, Procurement and Construction Contractor ('EPPC'). The EPPC will be responsible for the final selection of the components and materials of the Proposed Development and a key factor in selection will be fitness for purpose and durability.</p> <p><b>Sustainability:</b></p> <p>The Proposed Development will involve the development of a low carbon electricity generating station and carbon capture and storage infrastructure, which will support the development of a decarbonised cluster on Teesside and make a positive contribution toward the UK Government's legally binding target of net zero by 2050. It will therefore make an important contribution toward sustainability and climate change objectives.</p> <p>The Proposed Development will make use of previously developed land, notably the PCC Site will bring back into beneficial use part of the redundant Redcar Steel Works, while the design also incorporates landscape and biodiversity enhancements that will deliver Biodiversity Net Gain within the PCC Site. In addition, the Proposed Development has been designed to be resilient to the effects of flooding and climate change.</p> <p><b>Durability:</b></p> <p>The Proposed Development has been designed so that the PCC Site will have a minimum design life of 25 years, although it is likely that it will operate for a longer period. Toward the end of that period, the facilities within the PCC Site would be assessed for ongoing viability and, only if no longer</p>
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			<p>viable, be decommissioned. The various pipelines will have a minimum design life of 40 years.</p> <p>The detailed design of the Proposed Development will be finalised following the Front End Engineering Design ('FEED') stage and will be the responsibility of the appointed Engineering, Procurement and Construction Contractor ('EPPC'). In undertaking the final design the EPPC will select materials that are durable and fit for purpose over the lifetime of the Proposed Development. The final materials to be used will require approval from the relevant planning authority under Requirement 3 'Detailed design' of the draft DCO [REP5-002].</p> <p><b>Adaptability</b></p> <p>The Proposed Development has been designed to capture carbon dioxide emissions from a number of potential power and industrial emitters on Teesside. The proposed routing of the CO2 Gathering Network is such that it would provide the potential for the future connection of emitters, while the CO2 Export Pipeline has been sized to allow for future increased transport of CO2 to offshore storage sites.</p>
DLV.2.3	Applicants	<p>In response to ExQ1 DLV.1.9 [REP2-016] the maximum heights of the buildings and stacks was clarified, and Item 6 of ISH4 [EV8-001 to 006] discussed the issue of the stack heights and their relationship to air quality matters. Nonetheless, the height of the development platform and its relationship to the Landscape and Visual Impact Assessment does not appear to have been clarified yet.</p> <p>Could the Applicants provide further detail to clarify the height of the development platform.</p>	<p>The maximum elevations of the buildings and stacks assessed in ES Chapter 17 Landscape and Visual Amenity were based on an assumed worst-case development platform elevation of 13 mAOD in advance of an earthworks design. As the proposed development platform elevation has been confirmed by Teesworks to be 7.3 mAOD, the landscape and visual effects of the proposed development will be slightly less than set out in ES Chapter 17 although the significance of landscape and visual effects will not change.</p>
DLV.2.4	Applicants	<p>In terms of design quality and monitoring of approved materials, it was explained at ISH4 [EV8-001 to 006] that any divergence from approved materials would constitute a criminal offence. Additionally, RCBC raised the issue of resources in terms of enforcement.</p> <p>Could the Applicants consider an appropriate mechanism for providing monitoring that would manage conflict regarding such matters?</p>	<p>The Applicants confirmed at ISH4 that any divergence from the details which have been approved by the relevant planning authority pursuant to Requirement 3 'Detailed design' of the draft DCO [REP5-002] would constitute a criminal offence. Paragraph (11) of Requirement 3 requires Works Nos. 1, 3 and 7 to be carried out in accordance with the design parameters in Schedule 15 of the draft DCO and Paragraph (12) requires Work Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 9 to be carried out in accordance with the details approved under Requirement 3. The Applicants would therefore be required to construct the Proposed Development in accordance with the approved details. It would be open to the relevant planning authority to inspect the Proposed Development once completed to ensure compliance with Requirement 3, and the relevant planning authority has substantial</p>

			<p>information and enforcement powers under the Planning Act 2008.</p> <p>In addition to the existing terms of Requirement 3, the Applicants propose to require the provision of a monitoring report following the completion of construction, to ensure the Proposed Development has been built out in accordance with approved materials. The Applicants have discussed the principle of this with RCBC and will seek to agree the requirement wording for inclusion in the updated draft DCO at Deadline 8.</p>
DLV.2.5	HBC	<p>Viewpoints 1 to 4 indicate views from the Hartlepool area [APP-181 to APP-191 and APP-217 to APP-222]. At ISH4, the ExA raised concerns in particular with the visuals from the promenade at Seaton Carew (viewpoint 2).</p> <p>Could HBC provide comments on the following:</p> <ul style="list-style-type: none"> <li>i) Are you satisfied that viewpoints 1 to 4 are representative of typical views of sensitive receptors in these locations?</li> <li>ii) Did HBC have sight of these viewpoints in advance of submission of the Application, and if so, did you raise any issues?</li> <li>iii) The Applicants confirmed at ISH4 and in their post-hearing submission (Item 3, [REP5-027]) that amended visuals for viewpoint 2 are to be provided at D6. Do you consider there a need for any other amended or additional viewpoints from the Hartlepool area, including outside of the 5km Zone of Theoretical Visibility (ZTV)? Could you provide comments on the amended visuals by D8.</li> <li>iv) Provide any further comments you may have on the aforementioned visuals and Chapter 17 of the ES [APP-099] in terms of landscape and visual effects on the Hartlepool area.</li> </ul>	N/A
DLV.2.6	Applicants	<p>In the response to ExQ1 DLV.1.14 [REP2-016] it was stated that ES Appendix 25A Commitment Register [APP-347] would be updated to include reference to the principles identified in ES Chapter 17 [APP-099], and the Indicative Lighting Strategy [AS-017] being incorporated to minimise impacts to visual receptors and ensure that predicted effects are no worse than identified in the ES.</p> <p>As no such update has yet been received, please provide this by D7.</p>	<p>An updated Commitment Register [APP-347 including the incorporation of reference to the principles identified in ES Chapter 17 [APP-099], and the Indicative Lighting Strategy [AS-017] will be prepared and submitted at Deadline 7.</p>



## 9.0 DEVELOPMENT CONSENT ORDER

ExQ2	Question to:	Question:	Response
DCO.2.1	Applicants	<p>The third paragraph of the Preamble to the dDCO [REP4-002] refers to '[single appointed person]' whereas the second paragraph has correctly been updated to refer to a panel.</p> <p>The Applicants are asked to make a change to refer to the panel in paragraph 3.</p>	<p>The Applicants will delete the reference to "[single appointed person]" and insert the words "appointed panel" at paragraph 3 of the Preamble.</p>
DCO.2.2	Applicants RCBC STBC STDC Sembcorp Utilities (UK) Ltd	<p>R3(7) refers to the approximate number and location of cathodic protection posts and marker posts forming part of Work No.6 to be submitted to and approved by the RPA following consultation with STDC.</p> <p>How would 'approximate' be determined? Should the word 'approximate' be removed?</p>	<p>The exact no. of cathodic protection posts will be determined at the detailed design phase. Accordingly, the Applicants will delete "approximate" from R3(7).</p> <p>There is also reference to providing details of the "approximate" number and location of cathodic protection posts in R3(2) (detailed design details of WN2A) and R3(9) (detailed design details for WN8). The Applicants will also delete the reference to "approximate" in these paragraphs.</p>
DCO.2.3	Applicants	<p>Schedule 12 of the dDCO includes the address of some of the parties subject to each Part of the Schedule, but not every party.</p> <p>Should the address be provided in each case? If not, please explain the difference in approach?</p>	<p>For consistency, the Applicants will add the registered address to the definition of named beneficiaries of protective provisions in Schedule 12 where that has not already been provided. Details of the registered address will be added in respect of the following parties in the protective provisions:</p> <p>Part 4 (Air Products plc) whose registered address is Hersham Place Technology Park, Molesey Road, Walton On Thames, Surrey KT12 4RZ</p> <p>Part 5 (CATS North Sea Limited) whose registered address is Suite 1, 3<sup>rd</sup> Floor 11-12 St James's Square, London SW1Y 4LB</p> <p>Part 6 (CF Fertilisers UK Limited) whose registered address is Head Office Building, Ince, Chester, Cheshire CH2 4LB</p> <p>Part 7 (Exolum Seal Sands Ltd) whose registered address is 1<sup>st</sup> Floor 55 King William Street, London EC4R 9AD</p> <p>Part 8 (INEOS Nitriles (UK) Limited) whose registered address is PO Box 62 Seal Sands, Middlesbrough TS2 1TX</p> <p>Part 9 (Marlow Foods Limited) whose registered address is Quorn Foods, Station Road, Stokesley, North Yorkshire TS9 7AB</p> <p>Part 12 (NPL Waste Management Limited) whose registered address is One St Peter's Square, Manchester M2 3DE</p> <p>Part 13 (PD Teesport Limited) whose registered address is 17-27 Queen's Square, Middlesbrough TS2 1AH</p>

			<p>Part 14 (Redcar Bulk Terminal Limited) whose registered address is Time Central, 32 Gallowgate, Newcastle Upon Tyne, Tyne and Wear NE1 4BF</p> <p>Part 15 (Sabic UK Petrochemicals Limited) whose registered address is The Wilton Centre, Wilton, Redcar, Cleveland TS10 4RF</p> <p>Part 17 (Anglo American Woodsmith Limited and Anglo American Crop Nutrients Limited) whose registered address is 17 Charterhouse Street, London EC1N 6RA</p> <p>Part 18 (Suez Recycling and Recovery UK Limited) whose registered address is Suez House, Grenfell Road, Maidenhead, Berkshire SL6 1ES</p> <p>Part 20 (INEOS UK SNS Limited and ONE-DYAS UK LIMITED) whose registered address is Anchor House, 15-19 Britten Street, London SW3 3TY in respect of INEOS UK SNS Limited and 8<sup>th</sup> Floor 100 Bishopsgate, London EC2N 4AG in respect of ONE-DYAS UK LIMITED</p> <p>Part 22 (Huntsman Polyurethanes (UK) Limited) whose registered address is Concordia House Glenarm Road, Wynyard Business Park, Billingham TS22 5FB</p> <p>Part 23 (Navigator Terminals North Tees Limited) whose registered address is Oliver Road, Grays, RM20 3ED</p> <p>Part 26 (North Tees Limited, North Tees Rail Limited and North Tees Land Limited) whose registered address is The Cube, Barrack Road, Newcastle Upon Tyne, Tyne and Wear NE4 6DB</p> <p>The Applicants do not consider it appropriate to include addresses in Part 1 (protection of electricity, gas, water and sewerage undertakers) or Part 2 (protection of operators of electronic communications code networks) as these apply generally to a number of unspecified parties.</p>
DCO.2.4	RCBC STBC	The RPAs are each asked to provide a statement as to how they would resource the discharge of the DCO requirements, and whether they foresee any issues with being able to carry out the discharges effectively in accordance with the procedures and timescales set out in Schedule 13.	N/A
DCO.2.5	Applicants	<p>The Schedule of Changes to the dDCO [REP2-004] comments on a change to Schedule 15 (Design Parameters).</p> <p>The Applicants are asked to clarify the missing text at the bottom of page 12.</p>	<p>The wording at the bottom of page 12 of the Schedule of Changes should also include the bold words below:</p> <p><i>“Schedule 15 (Design parameters) Inner diameter of the absorber stack changed from 6.5m to 6.6m to align with the maximum inner diameter used for the purposes of the dispersion modelling in <b>Chapter 8 of the Environmental Statement [APP-090].”</b></i></p>

DCO.2.6	Applicants	<p>An updated version of the Explanatory Memorandum (EM) was provided at D5 [REP5-005/REP5-006]. Updated versions (clean and tracked) should be provided with each revision of the dDCO to explain the changes to the dDCO throughout the Examination with a final version provided at D11. The next update should also include (but is not limited to) the following:</p> <ul style="list-style-type: none"> <li>i) Paragraph 3.3.2 Explain why the text has been amended to delete reference to the Limits of Deviation.</li> <li>ii) Paragraphs 3.4.16/17 Explain why Articles 14 and 15 needed for the Proposed Development?</li> <li>iii) Paragraph 3.6.14 Explain how Article 25 addresses the Housing and Planning Act 2016 and precedent Orders.</li> </ul>	<p>The Applicants have provided an explanation with respect to these matters below and where necessary will incorporate these in the EM. The EM showing these changes will be submitted with the next dDCO to be submitted at Deadline 8 (20<sup>th</sup> September) in accordance with the examination timetable. The Applicants have submitted a dDCO and EM at Deadline 6. However, that has been submitted solely as part of the change request (as explained in the Applicant's covering letter).</p> <p>Explanation of matters raised by ExA in DCO.2.6:</p> <p><b><u>Limits of Deviation:</u></b></p> <p>Reference to limits of deviation was deleted on the basis that the DCO does not use the concept of limits of deviation. Instead, as set out in paragraph 3.3.2 of the EM, each numbered work must be situated within the corresponding numbered area shown on the works plans. Therefore, whilst each numbered work may be carried out within the coloured work area as shown on the works plans, the boundary of each "work" is not flexible and therefore acts in a similar way to a limit of deviation</p> <p><b><u>Need for Articles 14 and 15 of the dDCO:</u></b></p> <p>Article 14(1)(a) provides that the undertaker may, for the purposes of the authorised development, form and lay out the means of access, or improve existing means of access, at the locations within the Order limits identified in the third column of Schedule 4, which in turn refer to the Access and Rights of Way Plans [AS-150]. Article 14(1)(b) provides a general power to form and lay out such other means of access or improve the existing means of access as the undertaker reasonably requires for the purposes of the authorised development. The powers under Article 14 are required because the Applicants will need to create or improve existing means of access for the purposes of the authorised development. The power under Article 14(1)(b) is constrained by a requirement for the undertaker to first secure approval from the relevant planning authority. It would be incumbent on the undertaker to demonstrate that there is a reasonable requirement for the carrying out of such works pursuant to seeking that approval. Such a provision has been included in various DCOs including the East Anglia ONE North Offshore Wind Farm Order 2022. Article 15 provides that a street authority and the undertaker may enter into agreements with respect to the construction of a street or the carrying out of works in the street, and the alteration and diversion of the street. In addition to the model provisions, sub-paragraph (1) provides for such agreements to deal with the strengthening, improvement, or repair of any streets. Article 15 is a provision relating to, or to matters ancillary to, the authorised development</p>
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			<p>within section 120(3) as it directly relates to the safe construction of the authorised development. The power to enter into agreements with street authorities and highway authorities is necessary as section 278 of the Highways Act 1980 (agreements as to execution of works) does not relate to the powers under the Order. Such a provision has been included in various DCOs including The National Grid (King's Lynn B Power Station Connection) Order 2013, The Progress Power (Gas Fired Power Station) Order 2015, and the East Anglia ONE North Offshore Wind Farm Order 2022.</p> <p><b><u>How Article 25 of the DCO addresses the Housing and Planning Act 2016 and precedent Orders</u></b></p> <p>As acknowledged in “good practice point 8” in PINS Advice Note Fifteen: Drafting Development Consent Orders (AN15), the changes made to compulsory acquisition legislation by the Housing and Planning Act 2016 has necessitated amendments to the compulsory acquisition provisions in DCOs. Article 25(7) addresses this by introducing Schedule 8 to the DCO which provides for amendments to Part 1 of the Compulsory Purchase Act 1965. The purpose of the amendments is to ensure consistency between the provisions of the DCO and the Compulsory Purchase Act 1965 (as amended by the Housing and Planning Act 2016) as applied by section 125 of the Planning Act 2008. Broad precedent is provided for these modifications by Article 25 of the Silvertown Tunnel Order 2018 (which is referred to in AN15). In accordance with section 126(2) of the Planning Act 2008 these provisions are modified only to the extent necessary to ensure that they apply properly to the compulsory acquisition powers authorised by the DCO. There is also precedent in more recently made Orders for the drafting such as The A303 (Amesbury to Berwick Down) Development Consent Order 2020.</p>
DCO.2.7	Anglo American	<p>The Applicants' Comments on D3 Submissions and Updates to Previous Submissions [REP4-025] refer to Anglo American's D3 submission [REP3-016]. Paragraph 2.2.4 explains that the “mirror” protection in the York Potash Order has been deleted on the basis that it serves no purpose following the expiry of Anglo American's powers of compulsory acquisition under Article 27 of the York Potash Order. Additionally, paragraph 2.2.7 states that following the expiry of Anglo American's compulsory acquisition powers, the Applicants' position is that the retention of paragraph 193 of Part 17 of Schedule 12 of the DCO would in effect, give Anglo American a veto over the exercise of compulsory acquisition powers over the shared land in circumstances where there is no need for a reciprocal safeguard for the benefit of the Applicants. Consequently, the Applicants' position is that the deletion of paragraph is both reasonable and necessary.</p>	N/A

		Anglo American is asked to specifically comment on these provisions and to confirm whether or not they are acceptable.	
DCO.2.8	Applicants	R3 of the dDCO [REP5-002] does not specifically refer to the use of trenchless technologies for the installation of pipelines. The CEMP [APP-347] states that trenchless technologies will be used 'where reasonably practicable' (Table 5A-6).  Should the use of trenchless technologies be referenced in the DCO? If not, why not?	The Applicants require the ability to use trenchless technologies for the crossing of roads, rail lines and minor surface water bodies. The need for their use will be determined by the Contractor at FEED. The Applicants propose to amend R3 so that the use of trenchless technologies forms part of the approval of detailed design by the relevant planning authority.
DCO.2.9	EA Applicants	The EA notes [REP5-032] that R31 provides no requirement to construct Work No. 6, the CO <sub>2</sub> Gathering Network such that the construction of the new power station could occur without the benefit of the CO <sub>2</sub> Gathering Network.  i) The EA and the Applicants are asked to comment on whether R31(3) [REP5-002] would address this concern. ii) Should R31(3) be extended to include reference to Work No 6?	The Applicants do not consider that Requirement 31(3) should be extended to refer to Work No. 6. The Applicants' position remains as set out at pages 15 – 16 of the Applicant's Written Summary of Oral Submissions for ISH2 [REP1-036]. In addition to there being no statutory or policy requirement for the DCO to include a provision requiring the CO <sub>2</sub> Gathering Network to come forward in tandem with the generating station, there will in addition be a separate regime which governs and controls the bringing forward of the transport and storage network, and which encompasses the onshore gathering network (Work No. 6). The Applicants do not rely on the use of the wider gathering network as part of any of the assessments of potential environmental effect of the Proposed Development, nor as mitigation of any effects. Only the part of the network that runs from the proposed generating station to the offshore store would be required to capture the carbon from the generating station itself. The gathering network does not therefore need to be secured as part of the DCO and therefore the Applicants consider that a change to include an obligation to construct Work No. 6 is unnecessary.
DCO.2.10	Applicants EA	Responding to the EA's RR [RR-024], the Applicants indicated [REP1-045] that the EA will be consulted on the Decommissioning Environment Management Plan when appropriate.  Should this provision be incorporated into R32 of the dDCO?	The Applicants will amend R32(2) of Schedule 2 of the dDCO to be submitted at D8 as follows:  <i>32.—(1) Within 12 months of the date that any part of the authorised development permanently ceases operation (or such longer period as may be agreed in writing with the relevant planning authority), the undertaker must submit to the relevant planning authority for its approval (following consultation with Sembcorp <b>and the Environment Agency</b>)—</i>
DCO.2.11	North Tees Limited	In their Written Representation North Tees Limited [REP2-070] identified the need for the inclusion of suitable Requirements in the dDCO to give North Tees Group of Companies the opportunity as a consultee to review and approve detailed design of the CO <sub>2</sub> pipeline as part of the NZT Project Scheme.  North Tees Limited are asked to provide further justification for such a provision and to suggest the specific wording which any such Requirements should take.	N/A

DCO.2.12	MMO Applicants	<p>Condition 23 of Schedules 10 and 11 of the dDCO [REP5-002] has been amended to specify that the MMO must consult the EA before approving the unexploded ordnance (UXO) clearance methodology.</p> <ul style="list-style-type: none"> <li>i) Is the MMO content with this amendment?</li> <li>ii) Does the MMO's position remain as set out [REP3-011] that the matter should not be included within the Deemed Marine Licence and that activities related to UXO should be consented separately?</li> <li>iii) The Applicants and the MMO are asked to provide an update at D6 on discussions to address the wording of the Deemed Marine Licence generally and the MMO's position regarding UXO which was highlighted at D5 [REP5-034].</li> <li>iv) Should UXO be defined in either Schedules 10 and 11 or in Article 2?</li> </ul>	<ul style="list-style-type: none"> <li>i) The updated condition 23 in Schedules 10 and 11 of the dDCO [REP5-002] was discussed with the MMO at a meeting on 12<sup>th</sup> August 2022. It is anticipated that comments on its acceptability will be submitted by the MMO at Deadline 7. Further details of the MMO's position are set out in the response to ii) and iii) below.</li> <li>ii) The Applicants and the MMO held a meeting on 12<sup>th</sup> August 2022 which included a discussion on Condition 23 of Schedules 10 and 11 of the dDCO [REP5-002]. The MMO confirmed that it did not in principle object to including UXO clearance within the DMLs but that the Applicants would need to update the HRA Report [REP3-002] to include more information regarding the UXO assessment presented in ES Chapter 14 Marine Ecology in the Appropriate Assessment and potential mitigation in order to ensure the current drafting of the condition was robust. The Applicants have submitted the update to the HRA Report at Deadline 6 (Document Reference 5.13) which confirms the extent of the assessment which has been completed to inform the position regarding the conclusion of no significant effects to the integrity of the Southern North Sea SAC or its functional habitat in Tees Bay. The HRA has also been updated to include references to the mitigation proposed through the use of JNCC Guidelines to inform mitigation regarding UXO. The Applicants have concluded that no change is required to the condition, and await the MMO's comments]</li> <li>iii) The Applicants sent the MMO an updated table of all of the MMO's comments on the DML drafting since the DCO application was accepted, and details of how those comments have been addressed in the DML's submitted as part of the dDCO at Deadlines 2, 4 and 5. The MMO has completed an initial review of the DML changes and have not identified any material issues, however, the MMO will provide a more detailed review in due course. The Applicants refer to paragraph ii) in respect of the UXO clearance powers in the DML.</li> <li>iv) The Applicants will add a definition of "UXO" as "means unexploded ordnance" in Part 1 of Schedules 10 and 11 of the DCO. This change will be made as part of the full update to the dDCO at Deadline 8.</li> </ul>
DCO.2.13	Applicants ClientEarth	<p>At D5 ClientEarth provided a D5 submission made to Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order Examination (Annex A [REP5-030]). This indicates that the Applicant in that case was prepared to modify a number of definitions to embed the 90% capture rate and conveyance of it to the wider carbon transport and storage network. This formed part of the Applicant's Final Preferred draft DCO. The ExA also recognises that the Applicants' position expressed at ISH3 [REP5-025] that the capture rate will be controlled via the environmental permit for the generating station and so does not need to be and should not be duplicated in the requirement.</p> <p>Whilst noting that the ExA's Report has not yet been published and the Secretary of State's decision has not been made, the Applicants are asked to comment on the position adopted by the Applicant and its professional</p>	<p>The Applicants have considered the drafting in the Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order and the wording at Annex A of ClientEarth's D5 response [REP5-030].</p> <p>The only substantive difference in the Keadby 3 Order from the NZT dDCO is three definitions in Article 2, namely the definitions of 'carbon capture and compression plant'; 'commercial use'; and 'commissioning'.</p> <p>The Applicants' position remains as set out at pages 15 and 16 of their Written Summary of Oral Submissions for Issue Specific Hearing 3 (ISH3) [REP5-025]. It does not consider that there are any gaps in the drafting of the NZT dDCO that need to be filled by these definitions or any other drafting. The suggested</p>

		<p>advisors in the submission to the Keadby 3 Examination and why it is considered that a different approach should be adopted in this Examination.</p> <p>ClientEarth is asked to comment on the Applicants' position that including the capture rate in R31 is an unnecessary duplication of a control which will be provided through the environmental permits.</p>	<p>definitions in effect duplicate existing controls and are not necessary. Furthermore, the simple fact that these definitions were included in the draft Keadby 3 Order by that Applicant does not in itself demonstrate that they are required (let alone appropriate) in order to embed a minimum capture rate and conveyance of the captured carbon for transport and storage with respect to the NZT project. Nothing in ClientEarth's D5 response [REP5-030] demonstrates otherwise.</p>
DCO.2.14	Orsted The Crown Estate	<p>At D5 [REP5-002] the Applicants proposed amendments to Article 49 which provide for Modification of the Interface Agreement. The EM [REP5-005] explains the effect and purpose of the provision.</p> <p>Orsted and The Crown Estate are asked to comment on the revisions to Article 49 including whether, in their view, the proposed changes would remove the need for Crown consent. Comments on the EM are also invited.</p>	N/A
DCO.2.15	Orsted The Applicants	<p>In the Position Statement between the Applicants and Orsted Hornsea Project Four Limited [REP5-022] Orsted commented (paragraph 2.1.5) that the need for and appropriateness of a provision in the NZT DCO which interferes with the Interface Agreement should be fully examined in the NZT examination and considered by the SoS in the context of the facts and circumstances at the time of the NZT DCO decision. The Applicants' Summary of Oral Submissions for ISH3 [REP5-025] provides documents which had been submitted to the Hornsea Four Examination, namely the Interface Agreement and NZT's commentary on the Interface Agreement.</p> <p>Orsted and the Applicants are asked to confirm whether there are any other documents submitted to the Hornsea Four Examination which are of relevance to, and have not yet been submitted to, this Examination.</p>	<p>The Applicants oral submissions at Issue Specific Hearing 3 ("ISH3") (as summarised in the subsequent written summary submitted at Deadline 5, [REP5-025, electronic pages 11 to 15]) explained why the Applicants consider it is unnecessary to re-litigate the same submissions regarding the Interface Agreement and provisions in its respect in the NZT DCO, as have already been made in the Hornsea Project Four DCO.</p> <p>This overarching point is subject to one narrow exception, limited to the justification for including an equivalent provision addressing the Interface Agreement in the NZT DCO where the SoS has determined it appropriate to include such provision in the Hornsea Project Four DCO. The Applicants have consistently made clear that this narrow point is a matter that falls to be examined as a separate issue in this NZT DCO examination (as summarised in the written summary of submissions at ISH3 discussed above), and presented in the Joint Position Statement submitted with Orsted at Deadline 5 [REP5-022, electronic page 4].</p> <p>Without prejudice to those primary submissions about the need to re-litigate the same issues in the NZT DCO examination, the Applicants' also include as Appendix DCO.2.15 to this submission, bp's recent submission into Deadline 8 of the Hornsea Project Four DCO examination, which includes at Annex 1 a Legal Opinion from Jason Coppel QC, which confirms that:</p> <ul style="list-style-type: none"> <li>A. s. 120(3) PA 2008 read, in particular, with paragraph 3 of Schedule 5 to that Act, clearly provides the necessary vires for the inclusion of bp's proposed protective provisions in the Hornsea Project Four DCO; and</li> <li>B. in circumstances where the provisions are considered to interfere with the 'possessions' of Orsted in terms of A1P1 (by reference to their rights under the Interface Agreement), that the SoS would be entitled to establish that any such interference would be proportionate in the</li> </ul>

			<p>public interest, given the very strong public interest in preserving the full extent of the Endurance Store and so the delivery of the ECC plan. Whilst this Opinion was provided in the context of bp's proposed protective provisions into the Hornsea Project Four DCO, it provides similar confirmation in respect of the equivalent drafting of Article 49 in the NZT DCO considering the corresponding rationale.</p>
DCO.2.16	Applicants	<p>In the Position Statement between the Applicants and Orsted Hornsea Project Four Limited [REP5-022] the Applicants stated (paragraph 2.1.4) that the need for Article 49 is to deal with the situation where the SoS finds it appropriate to include a provision dealing with the Interface Agreement in the HP4 DCO but nonetheless refuses that application for other reasons or the HP4 DCO is granted subject to such provision but not implemented. The Applicants also recognise that where the SoS does not consider it appropriate to include a provision in the HP4 DCO dealing with the Interface Agreement, it would not be appropriate to include the equivalent provision in the NZT DCO.</p> <p>The Applicants are asked to clarify why, when the Order Limits do not extend to the Endurance Store, this DCO should address matters where there is a 'lack of direct physical conflict between the development proposed in the NZT DCO and HP4'.</p>	<p>Although there is no direct physical conflict between the Proposed Development and Hornsea Project Four, there is a direct physical overlap between Hornsea Project Four and part of the Endurance Store to which the offshore elements of the NEP project relate. The Applicants have been clear that there is a relationship between the offshore elements of the NEP project (subject to its own, separate consenting process) and the Proposed Development, making it appropriate to include the Article 49 provision in the circumstances described in the Position Statement (and repeated in paragraphs 3.7.15 to 3.7.18 of the updated Explanatory Memorandum submitted at Deadline 5 [REP5-005]).</p>
DCO.2.17	Orsted	<p>In the Position Statement between the Applicants and Orsted Hornsea Project Four Limited [REP5-022] and its Written Summary of Oral Case at ISH3 [REP5-038] Orsted stated that it considers that the need for and appropriateness of a provision in the NZT DCO which interferes with the Interface Agreement should be fully examined in the NZT examination.</p> <ul style="list-style-type: none"> <li>i) Does Orsted consider that the NZT DCO could or should provide for interference with the Interface Agreement given the lack of direct physical conflict between the development proposed in the NZT DCO and HP4?</li> <li>ii) Explain why it is considered that the introduction of a provision to disapply or otherwise address matters in the Interface Agreement would be a material change to the NZT DCO.</li> <li>iii) Noting Orsted's comment at 2.1.8 of the Position Statement, Orsted is asked to comment on the re-drafting of Article 49.</li> </ul>	N/A
DCO.2.18	Applicants Orsted	<p>In the Position Statement between the Applicants and Orsted Hornsea Project Four Limited [REP5-022] Orsted confirmed (paragraph 3.1.7) that it had submitted a draft set of protective provisions for inclusion in the NZT DCO (Appendix 1 [REP2-089]). (At D3 the Applicants indicated (paragraph 13.3.3 [REP3-012]) that they did not propose to comment on the detail of Orsted's protective provisions because there was no need/ justification for them.) The Applicants' position (paragraph 3.1.2 [REP5-022]) is stated to be that they are not aware of any explanation having been advanced by Orsted</p>	<p>In respect of sub-paragraphs (i) and (iii) to this question, the Applicants clarified at ISH3 why they did not consider protective provisions should be included for Hornsea Project Four's benefit (as summarised in the subsequent written summary of ISH3 at Deadline 5, [REP5-025, electronic pages 21 to 23]) and do not propose the repeat the same here to avoid duplication.</p>



		<p>as to the need for additional protective provisions in the NZT DCO in the scenario where Orsted's submissions as to protective provisions on the HP4 DCO have been accepted by the SoS.</p> <ul style="list-style-type: none"> <li>i) The Applicants are asked to comment on Orsted's proposed protective provisions [REP2-089].</li> <li>ii) Orsted is asked to clarify why it requires protective provisions in the NZT DCO for the benefit and protection of HP4 when the NZT DCO does not extend to the Endurance Store?</li> <li>iii) Should measures to safeguard the delivery of the HP4 be managed through the approvals process for the offshore elements of the NZT project rather than the NZT DCO?</li> <li>iv) Has Orsted sought to discuss issues and propose protections with the advisors to the decision maker in respect of the storage permit process and the related EIA process?</li> </ul>	<p>The Applicants set out in those submissions how and why the Hornsea Project Four DCO can and will deal comprehensively with the issue of whether and, if so, what protection is required for Orsted to ensure that Hornsea Project Four can successfully be delivered and why, by consequence, there was no need or justification to repeat the same in the NZT DCO.</p> <p>As a result (and relevant to sub-paragraph (ii) of this question), the Applicants' main comment on Orsted's proposed protective provisions is that no proper explanation has been advanced to date as to why these (or any other provisions) are necessary over and above what can be secured through the Hornsea Project Four DCO. That point is fundamental, and unless and until it has properly been addressed by Orsted it is simply not possible to provide meaningful comments on the detailed drafting that has been proposed.</p> <p>Protective provisions are only included in Orders where they are necessary (both in principle and in their detailed drafting) to overcome specific potential adverse impacts that might otherwise arise as a result of the exercise of the powers in the DCO. This will generally arise in circumstances where exercise of the powers sought (including for example powers of compulsory acquisition and temporary possession) could affect the land, rights and/or apparatus of statutory undertakers.</p> <p>In this case Orsted has yet to identify why (either in principle or in detail) any additional protection is needed in the NZT DCO to safeguard the delivery of Hornsea Project Four above and beyond any provision that could be included (and which it is seeking to include) in the Hornsea Project Four DCO. That is unsurprising, because of the wide scope that exists for including appropriate provision within the Hornsea Project Four DCO and the absence of any suggestion to the Examining Authority considering Orsted's application that successful delivery of that project depends on obtaining some specific additional protection in the NZT DCO.</p> <p>In those circumstances no need has so far been identified for any of the individual protective provisions. If Orsted is able to identify specific gaps in the protection that can reasonably be achieved within the scope of the Hornsea Project Four DCO, the Applicants would then be in a position to consider and respond to any such suggested gaps. Assuming that it could be established that a gap existed, it would then be possible to consider what additional protection might be justified within the NZT DCO and the appropriate form of drafting to secure it. Unless and until that has been done, however, it is not apparent what the drafting needs to achieve and therefore any consideration of individual provisions would take place in a vacuum and be devoid of any practical utility.</p> <p>In summary, either:</p>
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			<p>i) Orsted's submissions are preferred on the Hornsea Project Four DCO, such that all of the protection that Orsted considers to be necessary and appropriate to ensure the successful delivery of Hornsea Project Four is included within that Order. In those circumstances bp's alternative proposed protective provisions will have been rejected by the SoS. There would be nothing authorised by the NZT DCO which would impede the delivery of Hornsea Project Four (as Article 49 would logically not be included in such circumstances, with the equivalent provision having not been included in the Hornsea Project Four DCO) and so no need to duplicate the same drafting in the NZT DCO; or</p> <p>ii) bp's submissions are preferred on the Hornsea Project Four DCO, in which case the SoS will have rejected Orsted's case for its preferred protective provisions and there would be no basis for reaching an inconsistent decision in the NZT case by imposing Orsted's equivalent protective provisions in the NZT DCO.</p> <p>Whilst the Applicants appreciate this is an unusual position, because of the need to consider how the different scenarios which could emerge in the Hornsea Project Four DCO impact upon the recommendation and decision reached in this NZT DCO application, the narrow question of whether Orsted require protective provisions is clear cut. For the reasons summarised above, there is no rational case for the inclusion of any such provisions, regardless of the scenarios which emerge in the Hornsea Project Four DCO.</p> <p>For similar reasons, it is not clear why any additional provision/conditionality would need to be considered in the separate consenting process for the offshore elements of the NEP project (considering the scenarios discussed above, and the anticipated timescales for the determination of such consents (due May/June 2023, so some time after the expected determination of the Hornsea Project Four DCO)); however, such issues can be raised by Orsted and considered by the decision-maker in that process as appropriate.</p>
DCO.2.19	Applicants	<p>At D1 [REP1-036] the Applicants stated that the R16(2) (a) to (g) list is consistent with that in the Framework CEMP. The Applicants indicated that a Dust Management Plan would be covered by limb (b), a scheme for the control of any emissions to air. The list (a) to (g) does not include specific plans which are named in the Framework CEMP such as an Asbestos Management Plan.</p> <p>i) The Applicants are asked to consider amending R16(2) to ensure that all management plans required to be provided as part of the CEMP are specifically listed.</p> <p>ii) The RPAs are also invited to comment on this approach.</p>	<p>i) Requirement 16(2) of Schedule 2 of dDCO specifies that the Construction Environmental Management Plan (i.e. the 'full' CEMP) submitted to and to be approved by the relevant planning authority must be in accordance with Framework Construction Environmental Management Plan (Framework CEMP). The Framework CEMP is a certified document pursuant to Article 45 and Schedule 14. The Applicants are therefore legally obliged under the DCO to submit a full CEMP that includes all of the controls under the Framework CEMP. If the full CEMP did not include such measures as are required under the Framework CEMP, it would not be in accordance with it and the expectation would be that the relevant planning authority would refuse to approve it.</p>

			<p>The Applicants nevertheless recognise that the list at R16(2) and Framework CEMP both function as mechanisms to secure management plans and that the approach is not wholly consistent (with some plans appearing in one but not the other). In many instances the Framework CEMP is a more appropriate way of securing such plans given it can provide more detail on what is to be included in such plans than could appropriately be set out under a DCO Requirement. Furthermore, the approach adopted ultimately ensures that all of the management plans are secured under the DCO, and does not differ from the approach adopted in other DCOs.</p> <p>To provide greater certainty that R16 secures all management plans, and is consistent with the FCEMP, the Applicants intend to add the following new sub-paragraph in Requirement 16(2) (which sets out details of what the construction environmental management plan must incorporate):</p> <p><i>“any other management or mitigation plans set out in the framework construction environmental management plan”.</i></p> <p>ii) N/A</p>
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## 10.0 GEOLOGY, HYDROGEOLOGY AND LAND CONTAMINATION

ExQ2	Question to:	Question:	Response:
GH.2.1	RCBC EA	<p>RCBC's Local Impact Report (LIR) [REP1-046] stated that to ensure full characterisation of the site the standard Contaminated Land Condition should be applied to any planning permission granted. The EA also asked for amendments to the wording of R13 [REP-032]. The Applicants have since amended R13 in relation to 'Contaminated land and groundwater' [REP5-002].</p> <p>i) RCBC are asked to comment on R13 and to indicate whether or not this meets its original request to apply their standard condition.            ii) The EA is asked to confirm that R13 now meets its requirements.            iii) If it does not meet your concerns, proposed amendments to R13 should be provided by D6 and the Applicants response provided at D7.</p>	N/A
GH.2.2	Applicants RCBC STBC EA	<p>Details of additional site investigation, conceptualisation and risk assessment has been provided [APP-092, APP-293, APP-294, REP4-027]. It is the ExA's understanding that STDC has applied for permission to undertake additional works in 2022. It is also our understanding from SoCGs that discussions are being held between the parties in respect of all of the above.</p> <p>Please provide comment on whether or not after remediation and in the context of R13, as a minimum land is unlikely of being capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990.</p>	The probability of the site being identified as contaminated land under Part 2a is unlikely. The works undertaken by AECOM have been and are informed by UK legislation, EA guidance (LC:RM, 2021) and industry best practice. A ground investigation was undertaken in 2021 and a second phase of ground investigation is currently underway at the site. Following the GI, Teesworks will be undertaking remediation of the site. However, AECOM will use the findings of the GI to determine whether additional remediation is required, above what is being undertaken by third parties, and, if so required, develop a remediation strategy to mitigate the identified contaminant linkages that may impact the proposed development or that the proposed development may affect. At all stages the Local Authority and the Environment Agency will be consulted and agreement will be obtained.
GH.2.3	Applicants	<p>The EA has recommended changes to R23 and R25 to reference the most up to date ground investigation work [REP5-032].</p> <p>Please provide an update to the ExA on this issue.</p>	The Applicants intend to make updates to DCO Requirements 13, 23 and 25 in response to comments from the EA at Deadline 5 [REP5-032]. The Applicants have set out in full their proposed amendments to these DCO Requirements in its response to the EA's comments (Document Ref: 9.28).
GH.2.4	RCBC STDC	<p>Services are likely to be affected by differential movement allowance needs to be made to install flexible connections for water and gas lines to accommodate ground movement Paragraph 10.6.70 of ES Appendix 10A [APP-292]. These are secured via R3, R34 and Schedule 14 of the DCO. The local authorities are responsible for approving the works.</p> <p>Are the local authorities satisfied that the requirements in the DCO will provide them with sufficient detail and control over this aspect?</p>	N/A
GH.2.5	Applicants	In the response to ISH4 [REP5-027] the Applicants state that the ' <i>method and mitigation... differ from those discussed at a meeting with Natural England on</i>	The HDD method discussed with NE assumed use of a single drilling rig located on-shore. On-going work with potential HDD contractors confirmed

		<p><i>12th July 2022 following receipt of updated information from potential HDD contractors'.</i></p> <p>Please provide further details of how the HDD method and mitigation has changed, and provide an update on discussions with NE in this respect.</p>	<p>that use of two drilling rigs, located onshore and off-shore drilling toward each other represented the best construction method to minimise the risk of HDD bore failure as this method allows protection of the off-shore area by use of a steel conductor pipe. The mud pressure within the bore will also be lower than when a single rig is used. This information was presented to NE as noted in Item 4 in the Applicant's Written Summary of ISH4 [REP5-028].</p>
GH.2.6	Applicants	<p>The response to ISH4 [REP5-027] states that NE requested a 'clean-up plan' in relation to HDD collapse in its letter dated 1 July 2022.</p> <p>How is it proposed that this will be addressed and what is the timescale for this?</p>	<p>An example contractor's drilling method statement including pollution control measures has been included in Appendix GH.2.6.</p>
GH.2.7	NE	<p>An 'example' of how the risks from frac-out and drilling mud spillage would be mitigated and controlled is provided in the updated CEMP [REP5-013]. The formal plan to prevent risks of frac-out and minimise any associated risk of pollution will form part of the final CEMP.</p> <p>Is NE satisfied that the risks from frac-out from HDD operations would be adequately controlled by the DCO?</p>	<p>N/A</p>

## 11.0 HISTORIC ENVIRONMENT

ExQ2	Question to:	Question:	Response:
HE.2.1	RCBC HBC Historic England	The Applicants' responses to ExQ1 HE.1.5 and HE.1.6 [REP4-028] provide assessments of significance of the blast furnace and associated steel works infrastructure, and the setting of the conservation areas at Coatham, Kirkleatham, Yearby, Wilton and Seaton Carew. Can RCBC, HBC and Historic England confirm their satisfaction with these assessments of significance and effects, or do they require any further information or clarification?	N/A
HE.2.2	Historic England	In Historic England's response to ExQ1 HE.1.5 it is noted that 'a request for listing the Blast Furnace has been received from a member of the public and it is currently being looked at'. Please provide an update.	N/A
HE.2.3	RCBC STBC HBC Historic England MMO	The Applicants' response to ExQ1 HE.1.1 [REP4-028] provides details on the scope of archaeological investigation, and states that construction activity would not impact buried archaeological remains and that therefore mitigation set out in a Written Scheme of Investigation (WSI) is not required. The response also includes the WSI for marine archaeology. The updated Framework CEMP [REP5-014] includes procedures for reporting, protection and management of unexpected archaeological discoveries. i) Could the RPAs (in consultation with the relevant archaeology service for your area as necessary) and Historic England confirm their satisfaction with this approach, or if they require any further information or clarification? ii) Could the MMO and Historic England confirm satisfaction with the WSI for marine archaeology, or if they require any further information or clarification?	N/A
HE.2.4	Applicants RCBC STDC	Development Principle STDC8 of the South Tees Area SPD [REP2-054] 'Preserving Heritage Assets' supports proposals which contribute to the development of an industrial heritage trail. Paragraph 3.67 of the SPD notes that this will likely be handled as a discrete project placed under the direct control of RCBC working with local heritage groups. Part A.4 of the Teesworks Design Guide [REP2-055] 'Landscape and Public Realm Strategy' and section 12 of the South Tees Regeneration Masterplan [REP2-053] also refer to the importance of preserving aspects of the existing fabric to ensure the area's industrial heritage is not lost, and the creation of a consistent identity for the wider Teesworks development. A number of potential site entrances from the England Coastal Path/ Teesdale Way/ Black Path PRoW are shown on the illustrative plan on page 161 of the Masterplan as being close to the Order Limits of the PCC site. Could the Applicants consider: i) The potential for the Proposed Development to contribute to such a project for a heritage trail; and	i) The Applicants acknowledge the industrial heritage of the PCC Site and the wider Teesworks site. The Applicants have discussed the status of a potential heritage trail with Redcar and Cleveland Borough Council (RCBC). While RCBC would support the development and delivery of a heritage trail, they note that a number of the non-listed assets of industrial heritage within the Teesworks site have been demolished by the landowner under permitted development rights, and that the development of such a trail is largely outside RCBC's control as the land is controlled by STDC. At present, the Applicants have not been advised by STDC of any proposals for a heritage trail and it is understood that STDC needs to consider the future alignment of PRoW within the Teesworks site alongside the establishment of the Freeport and its boundaries. It is not therefore appropriate or possible for the Applicants to make a commitment with regard to a financial contribution in the absence of any firm proposals (or mechanism for the delivery) for such a trail. The Applicants also note that its environmental assessment did not identify any significant adverse effects in respect of heritage matters and which would require

		<p>ii) Could any remaining former industrial infrastructure on and around the PCC site be incorporated into a future landscaping scheme to assist in this vision for a heritage trail?</p> <p>RCBC and STDC:</p> <p>i) Are you able to provide any further information or update on future plans for an industrial heritage trail?</p>	<p>mitigation. As regards any potential for the Applicants to deliver part of any heritage trail, it would not be appropriate to route any heritage trail (or other PRoW) within the PCC Site given that it will be a secure COMAH classified site.</p> <p>ii) There are no industrial structures of note remaining within the Order Limits. In addition, the Applicants are not in control of the demolition/retention of structures at the Teesworks site. That is a matter for STDC, who control the Teesworks site, as part of its wider demolition programme for the area.</p>
HE.2.5	Applicants RCBC	<p>ExQ1 HE.1.3 asked IPs whether R14 of the dDCO would be appropriate in safeguarding any known and unknown archaeological features, and if not sought suggested amendments to the wording. RCBC [REP2-094] indicated that it had no adverse comments to make however guidance from Cleveland Industrial Archaeology Society (CIAS) would also be recommended. Commenting on the response, the Applicants [REP3-011] noted that CIAS is not a statutory consultee but a local society that makes records of industrial sites and equipment, carries out historical research and works to help the preservation of business records and physical relics.</p> <p>i) Can the Applicants and RCBC confirm that they are content with the current wording of R12 and that consultation of CIAS can be undertaken without amendment of the Requirement.</p> <p>ii) Should the Applicants and RCBC not agree with this approach, can you propose an alternative.</p>	<p>The Applicants confirm they are happy with the wording of R14 and consultation can be undertaken with CIAS without amendment of the Requirement. As the Applicants have noted previously, the relevant planning authority has discretion as to who to consult regarding specific requirements and can if appropriate consult additional parties to any that may be listed in a Requirement.</p>
HE.2.6	Applicants RCBC	<p>The nearest Listed buildings to the PCC site are located at Marsh Farm, Warrenby. A limited assessment of the group of three Listed buildings at Marsh Farm is provided within ES Chapter 18 (paragraphs 18.6.14 to 18.6.24). Paragraph 18.6.4 of ES Appendix 18 [APP-338] notes that the buildings date from the late 18<sup>th</sup> Century.</p> <p>ExQ1 HE.1.4 iv) asked whether the Applicants' assessment of impacts to the setting of nearby designated heritage assets in ES Chapter 18 (paragraphs 18.6.14 to 18.6.24) was sufficient, and whether their significance has been adequately identified and assessed. RCBC in their response [REP2-094] stated that 'there is potential for greater impact on setting, for example even from Huntcliff overlooking Saltburn'.</p> <p>Could RCBC explain further their response and provide comments specific to the group of Grade II listed buildings at Marsh Farm.</p> <p>Could the Applicants:</p> <p>i) Provide a copy of the List descriptions for all three listed buildings at Marsh Farm; and</p> <p>ii) Provide a more detailed assessment of their significance and the effect of the Proposed Development on their setting in accordance with section 5.8 of NPS EN-1 so that the ExA is able to make an informed recommendation in accordance with Section 3(1) of the Infrastructure Planning (Decisions) Regulations 2010.</p>	<p>A response to HE.2.6 will be provided at Deadline 7.</p>

## 12.0 MAJOR ACCIDENTS AND NATURAL DISASTERS

ExQ2	Question to:	Question:	Response:
MA.2.1	EA	<p>In Table 22-1 of the ES [APP-2014] the EA is quoted as requesting that the EIA contains a worst-case estimation of firewater runoff production, including for remediation following a fire, and demonstrate that a solution to containment, treatment and/ or removal can be met on the site. Details have not been provided regarding provision of a detailed firewater containment system. The Applicants have stated that it will be required as part of a permit and details will therefore be agreed at that stage.</p> <p>Is the EA content with this approach?</p>	N/A
MA.2.2	Applicants	<p>Section 22.7 [APP-104] refers to proposed use of dense phase CO<sub>2</sub> dispersion modelling to understand the potential hazards of a major release, and that the outcomes of this modelling would be incorporated into the design of the Proposed Development. In REP2-016 the Applicants confirm that this will be undertaken.</p> <p>Provide an update on the dense phase CO<sub>2</sub> dispersion modelling.</p>	<p>Dense phase CO<sub>2</sub> dispersion modelling has been carried out, as part of Pre FEED/ early FEED, using:</p> <p>(1) PHAST – commercially available software, widely used in industry. This was used for the dense phase, buried pipeline modelling and the LP and HP CO<sub>2</sub> plant systems (i.e., HP Compression, LP Compression, CO<sub>2</sub> conditioning system).</p> <p>(2) FROST – proprietary software. This was used for the dense phase, buried pipeline modelling as verification of the PHAST work.</p> <p>The Applicants FEED Contractors will be using the following additional modelling as part of the design development for FEED:</p> <p>(1) PHAST for dense phase and gas phase CO<sub>2</sub> modelling including vent dispersion modelling.</p> <p>(2) Computational Fluid Dynamics (CFD) analysis in some cases to model extent of gas cloud and concentration and low temperature analysis.</p> <p>(3) Hysys Dynamic modelling to perform a transient analysis of the dense phase export pipeline depressurisation, following a hypothetical rupture, to obtain a release rate and properties for the released fluid in the event of such a scenario.</p> <p>The above consequence modelling will be documented in the Toxic Hazard Analysis (THA) and Low Temperature Hazard Analysis (LTHA) which will inform the plant design and final layout, within the parameters specified in the draft DCO. The data will also feed into the QRA (Quantitative Risk Analysis) which will quantify the risk to onsite and offsite personnel.</p> <p>The THA and LTHA are due for completion later in 2022. This work will be used to inform the subsequent COMAH application and the control philosophies to be used on the plant.</p>



MA.2.3	Applicants	<p>Section 22.4.4 of ES Chapter 22 Major Accidents and Natural Disasters [APP-104] states that the geology underlying the Site is of no to low risk of hazards from ground stability. The ExA has noted the Applicants' response in relation to earthquakes [REP2-016].</p> <p>Could this statement also be resolved in the context of the hazards listed in Table 10D-2, in particular that lateral displacement was observed to have caused structures in the vicinity of the former sinter plant to crack and in light of the hydraulic fill identified at the site.</p>	<p>Section 14.2 in the Applicants' Ground Investigation Interpretative Report [REP2-043] describes the main geotechnical risks relating to the proposed foundations as being:</p> <ul style="list-style-type: none"> <li>- the presence of obstructions and voids,</li> <li>- inadequate bearing capacity due to poorly compacted, loose and soft underlying material (including total and differential settlement),</li> <li>- heave and collapse settlement of Made Ground subject to loading or changes in the groundwater regime,</li> <li>- soil contamination,</li> <li>- groundwater contamination and</li> <li>- aggressive ground conditions for buried concrete and steel.</li> <li>- Expansion of steel slag may also occur.</li> </ul> <p>The Ground Investigation Interpretative Report [REP2-043] sets out the foundation options selected to mitigate geotechnical risks to the Proposed Development set out in Table 10D-2 [APP-295], including ground stability, by using either piled or raft foundations. The rationale for the selection of the chosen foundation options is set out in the AECOM Foundations Optioneering Appraisal Report [REP2-048]. Through these methods, the Applicants are confident that the lateral displacement visible on the structures in the vicinity of the sinter plant can be avoided for structures associated with the Proposed Development. That lateral displacement is also not considered to relate to the potential for geological risk discussed in Section 22.4.4 of ES Chapter 22 Major Accidents and Natural Disasters [APP-104].</p>
MA.2.4	UK Health Security Agency	Can the UK Health Security Agency comment on the Applicants' approach to assessment of major accidents as set out in ES Chapter 2 Major Accidents and Natural Disasters 2 [APP-104] in the context of the Proposed Development comprising elements of novel technology.	N/A
MA.2.5	UK Health Security Agency	Does the UK Health Security Agency consider that the Applicants have identified and assessed the potential risks associated with the carbon capture, transport and storage component?	N/A

### 13.0 NOISE AND VIBRATION

ExQ2	Question to:	Question:	Response:
NV.2.1	Applicants	R21 and R22 of the dDCO [REP5-002] establish controls for noise during construction and operation. Please signpost how noise would be controlled during decommissioning or explain its omission.	The Applicants consider that noise emissions from decommissioning are likely to be similar to those of construction and would be subject to the same ABC limits (or similar future controls). The Applicants consider that this is secured through Requirement 32 (Decommissioning) and propose to update R32 to specifically require that the decommissioning environmental management plan must address mitigation for potential noise impacts.
NV.2.2	RCBC STBC	Noise and vibration from trenchless technologies for water supply and discharge corridors have been scoped out on the basis that there are significant distances to receptors and works of a minor nature compared to PCC [paragraph 11.6.22 of APP-093 and REP2-016]. In addition, there is potential that vibration impacts could cause to occupants of the office spaces in the industrial developments (paragraph 11.5.9). For this reason, issues in relation to vibration will be covered in the final CEMP. Are the Local Authorities content with this approach?	N/A

#### 14.0 PLANNING POLICY AND LEGISLATION

ExQ2	Question to:	Question:	Response:
PPL.2.1	Applicants RCBC STBC	Sections 3.3, and 4 and 5 of the Planning Statement [REP1-003] refer to the local and national policy context. The Applicants and RPAs are asked to confirm if they are aware of any additional local or national policy or guidance which has been issued since production of the Planning Statement in May 2022. If so, provide details of relevance to and implications for the Proposed Development.	Following a check by the Applicants, it can be confirmed that no additional local or national policy or guidance has been issued since production of the May 2022 Planning Statement.

## 15.0 SOCIO ECONOMICS AND TOURISM INCLUDING MARINE USERS

ExQ2	Question to:	Question:	Response:
SET.2.1	RCBC	<p>Section 19 of the Applicants' response to D2 submissions [REP3-011] provides comment on RCBC's answer to ExQ1 SET.1.6 [REP2-094] in relation to Redcar Town Football Club.</p> <p>Are RCBC satisfied with the response or do you have any further comment to make on this matter?</p>	N/A
SET.2.2	Applicants PD Teesport	<p>The Applicants' response to ExQ1 SET.1.5 [REP2-016] refers to an intention to seek to agree that Navigational Risk Assessments undertaken are appropriate with each relevant authority via SoCGs. The response by PD Teesport to ExQ1 SET.1.5 [REP2-093] refers to raising the query with the Harbour Master.</p> <ul style="list-style-type: none"> <li>i) Can PD Teesport provide an updated response to the question regarding whether the scope of the Navigational Risk Assessment is adequate and appropriate; and</li> <li>ii) Can PD Teesport and the Applicants confirm whether such matters will be included in the next version of the SoCG.</li> </ul>	<p>The Applicants held a preliminary discussion with the PD Teesport Harbour Master on 7<sup>th</sup> July 2022. This was an introductory session to provide an overview of the requirements for the Proposed Development. Both parties have agreed to continue working together as the programme progresses. The Applicants confirm that this item will be included in the next revision of the SoCG.</p>

## 16.0 TRAFFIC AND TRANSPORT

ExQ2	Question to:	Question:	Response:
TT.2.1	RCBC	In its D2 response [REP2-094] RCBC said that they would now prefer junction surveys over three days within the period Tuesday to Thursday, with a fortnight duration automatic traffic counter process to establish the baseline traffic flows. The Applicants responded [REP3-011] stating that the methodology was standard and had been agreed between the parties in January 2020. RCBC is asked to provide an update on its position in light of the Applicants' response.	N/A
TT.2.2	Applicants	RCBC state that the 'Construction traffic management plan' and 'Construction workers travel plan' are acceptable if accompanied by 'formal monitoring'. Can the Applicants provide details of how such monitoring would be secured in the DCO.	Requirement 18(2) specifies that the final construction traffic management plan submitted to and approved by the relevant planning authority must be in accordance with the framework construction traffic management plan (FCTMP). The FCTMP is a certified document under Article 44 and Schedule 14 of the dDCO. The FCTMP (APP-334) specifies at paragraph 16.5 that monitoring must be undertaken by the appointed contractors to assess the effectiveness of the measures included in the final CTMP to control the routing and impact of construction HGVs. The Applicants consider that the final CTMP would not be approved by the relevant planning authority without details of the monitoring proposals. However to remove uncertainty, it will add a new R13(3)(f) which specifies that the final CTMP must include: " <i>details of the monitoring to be undertaken in accordance with paragraph 16.5 of the framework construction traffic management plan</i> ".  Requirement 19(1) specifies that a construction workers travel plan must be submitted to and approved by the relevant planning authority. R13(3)(d) specifies that the plan must include "a monitoring and review regime". No changes are required to the dDCO to secure the monitoring arrangements in respect of the construction workers travel plan.
TT.2.3	Applicants	Provide an update on discussions with PD Ports regarding transport and delivery of Abnormal Indivisible Loads.  What confidence can the ExA have that the option to transport Abnormal Indivisible Loads will be possible via the port?	The Applicants anticipate using the PD Ports Teesport facility for the import of containerised materials and pre-fabricated skids during construction and commissioning of the Proposed Development. The Applicants are not proposing to import materials via Teesport that would impose unique requirements on PD Ports (as abnormal indivisible loads (AILs) would) and therefore expect to be a customer for standard port services. The Applicants nominated EPC contractor(s) will be responsible for all freight import and therefore engagement with PD Ports will commence on award of EPC contract(s). The Applicants propose to use the Redcar Bulk Terminal facility for the import of AILs.
TT.2.4	RCBC	Additional traffic modelling has been provided at the behest of RCBC [REP3-013 and REP4-026]. Do RCBC have any comments to make on the modelling and subsequent conclusions?	N/A

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TT.2.5	STDC	REP3-013 includes consideration of use of the Lackenby Steelworks Gate as an alternative access for HGV traffic to Tees Dock Road. Given the concerns raised by STDC at D3 [REP3-026] in relation to this matter, please provide an update on the situation and comments on the additional modelling undertaken.	N/A
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## 17.0 WATER ENVIRONMENT

ExQ2	Question to:	Question:	Response:
WE.2.1	Applicants EA NE	<p>Process water discharges (particularly nitrogen) have the potential to have adverse effects on the site integrity of the Teesmouth and Cleveland Coast Ramsar, SPA and SSSI. NE has raised its concerns regarding the issue of nutrient neutrality in its written representation [REP2-065], SoCG [REP1-010] and in its D4 response [REP4-040]. The EA has raised the potential issue of cumulative impacts of dissolved inorganic nitrogen on WFD and the site integrity of nearby designated sites in its SoCG [REP1-009]. The ExA notes the response to this matter in the Applicants' response to ISH4 [REP5-027].</p> <ul style="list-style-type: none"> <li>i) Modelling of discharges to the Tees Estuary and Dabholm Gut, and the conclusions of discussions between the parties have not been provided to the ExA. As this has implications for both the HRA and WFD assessments, this is now considered a matter of some urgency.</li> <li>ii) All – provide an update on the outcome of the Applicants' modelling of the effects on the estuary and subsequent discussions between the parties on this matter</li> <li>iii) EA – confirm whether or not you agree with the conclusion in REP5-027 that the foul effluent discharges to Marske-by-the-Sea will not affect nutrient neutrality.</li> <li>iv) All – update the position with respect to discharges to Dabholm Gut and discussions regarding <i>de minimis</i> levels.</li> </ul>	<ul style="list-style-type: none"> <li>i) The Applicants recognise that the Examining Authority requires the information as soon as possible, to enable it to be examined. The results of modelling will be provided at D7. The Applicants have been discussing the modelling with both the EA and NE and will continue to do so prior to D7.</li> <li>ii) Modelling of concentrated cooling water discharges to Tees Bay has been undertaken and the results presented to the EA and NE. Modelling assumed that process water would be treated at NWL's Bran Sands WwTW with treated water discharged to Dabholm Gut. This preliminary modelling has identified that discharges from either the existing or replacement outfall do not enter the Tees Estuary. An updated modelling report is in preparation and will be submitted at D7 along with a note on nutrient nitrogen issues in the Dabholm Gut. The Water Framework Directive assessment will also be updated to assess the impacts of nitrogen discharges to Tees Bay on the WFD status of this waterbody and will also be submitted at D7.,</li> <li>iii) N/A</li> <li>iv) The Applicants recognise that the discharge of treated effluent from Bran Sands WwTW to the Dabholm Gut will impact on nutrient nitrogen concentrations in the Dabholm Gut and Tees Estuary. The Applicants therefore propose to take an equivalent volume of treated effluent back from Bran Sands for discharge to Tees Bay via either the existing or replacement outfall. This discharge will be modelled in the updated discharge modelling and the results incorporated in the updated WFD assessment.</li> </ul>
WE.2.2	EA	<p>It is understood that the Applicants presented additional modelling to the EA in April 2022 regarding atmospheric deposition of nutrients to WFD water bodies.</p> <p>The EA is asked to confirm whether or not it is content that the effects on the WFD water bodies from atmospheric deposition of nutrients would be negligible and that no deterioration would be caused. Does the EA also agree with the Applicants' conclusion that this deposition does not need to be considered in combination with direct discharges to water bodies? Please bear AQ.2.2 in mind when answering this question.</p>	N/A
WE.2.3	Applicants	<p>In response to the ExA's WE.1.28 regarding the EA's [RR-024] request for a hazardous substance assessment, the Applicants explained that this would be addressed in a Hazardous Substances Management Plan.</p> <p>How is this Plan secured in the DCO?</p>	<p>The response to WE.1.28 stated a Hazardous Materials Management Plan (including asbestos), would be produced prior to construction commencing, as set out in paragraph 10.5.3 in Chapter 10 Contaminated Land. This plan would be secured by a modification to Requirement 16. The proposed drafting is set out in the Applicants Response to the EA's D5 submission (Document Ref. 9.28).</p>

WE.2.4	EA	<p>The CEMP outlines monitoring requirements in respect of the temporary impact from increased turbidity during construction to Redcar Coatham Bathing Water [paragraph 9.6.13 of ES Chapter 9, APP-091].</p> <p>Is the EA content that the provisions in the CEMP are sufficient to undertake its duties in respect to protection of water quality?</p>	N/A
WE.2.5	Applicants	<p>The Above Ground Installation at Bran Sands (Works No 2B) is in Flood Zone (FZ)3. Works No 2B contains <i>inter alia</i> instrumentation, communications equipment and parking, and is potentially vulnerable to flooding. The explanation of how the sequential test was applied to this potentially vulnerable use provided in REP5-027 is noted.</p> <p>Please provide a map that shows the scale of the above ground works and illustrates the alternative areas considered in the context of the flood mapping.</p> <p>Given that FZ3 is narrow in this area, has consideration been given to splitting the works and potentially putting some elements in less vulnerable areas?</p>	<p>The Applicants have attached the requested plan in Appendix WE.2.5.</p> <p>The AGI for Work No. 2B is required to create the natural gas connection between the existing Sembcorp South Pipeline and the PCC site. The current design development indicates that the AGI will require a single PIG launcher/receiver with associated valving, instrumentation and communications equipment. The area for Work No. 2B is constrained by the existing access road for the Sembcorp pipeline corridor and therefore the Applicants' FEED contractor is working within these constraints.</p> <p>The Applicants continue to assess the optimum configuration for the AGI equipment as part of detailed design but operability restricts the Applicants from splitting the works with some being located in less vulnerable areas. The main equipment (PIG launcher/receiver, valving, instrumentation) will need to be co-located at the AGI. Vehicle access is required to the AGI during operation, for loading and launching of PIGs. Planned maintenance will be scheduled during summer months, aligning with any planned shutdown of NZT Power, when electricity demand is predicted to be lowest. Therefore, the main vehicle access and operation of the AGI would be during periods of reduced risk of flooding.</p> <p>The Flood Risk Assessment [APP-250] demonstrates that the Proposed Development (including areas within Flood Zones 2 and 3) will be safe from the risk of flooding through the implementation of various measures, including a Flood Emergency Response Plan. The latter will include plans to evacuate land at risk of flooding.</p>
WE.2.6	Applicants	<p>A sequential test should be applied to all potentially vulnerable uses at the site level to minimise risk, not just the AGIs. While it is appreciated that the overall scheme is 'essential infrastructure', placement of the more vulnerable uses within this should still follow a sequential approach. As an example, Works No 9D (Saltholme laydown) is in FZ3. The dDCO defines this part of the development as including contractor compounds and welfare facilities, which would be vulnerable to flooding, and further justification should therefore be provided for locating it in a high risk area.</p> <p>Please provide details of all potentially vulnerable uses in FZ2 or FZ3. This should be accompanied by a sequential test for each identified use.</p>	<p>The only parts of the development with potentially vulnerable uses within the order limits which are outside FZ1 (other than the AGI at Bran Sands (part of Work No 2B)) are:</p> <ul style="list-style-type: none"> <li>• Work No. 9D located in FZ3a (albeit with flood defences); and</li> <li>• Work No. 9E located in FZ2 (undefended).</li> </ul> <p>These are illustrated on the plan in Appendix WE.2.6.</p> <p>Along with Work No. 9F (located in FZ1), Work Nos. 9D and 9E are areas of land in North Tees where there is direct existing access to the Order Limits from the highway network whilst having sufficient space for staff parking, materials storage and welfare facilities. Work No. 9E is located on pasture which provides direct access to the CO<sub>2</sub> Gathering Network Corridor. Work</p>



			<p>No. 9D is an established area of hardstanding that has been previously used for laydown during maintenance activities within the Sembcorp pipeline corridor.</p> <p>Due to the linear pipeline construction required for Work No. 6 on the North Tees, the Applicants have identified strategic temporary laydown areas to support the safe and efficient construction of the CO<sub>2</sub> Gathering Network pipeline. Work Nos. 9B – 9F are placed close or adjacent to the existing pipeline corridor and have been selected to facilitate material and equipment transportation from public highways. The proposed laydown areas will provide the EPC contractor with periodic laydown areas to store and stage materials, provide welfare facilities to construction personnel and in some instances access to the work front from public highways.</p> <p>As both Work No. 9D and Work No. 9E are not in Flood Zone 1, the Sequential Test (and if necessary, the Exception Test) should be applied.</p> <p>The Sequential Test for Work Nos. 9D and 9E is set out in paras. 9.6.16 to 9.6.31 in ES Appendix 9A: Flood Risk Assessment [APP-250] which concluded that the Sequential Test was satisfied in both cases.</p> <p>As Work Nos. 9D and 9E are located to in Flood Zones 3a (defended) and Flood Zone 2 respectively the Exception Test must be applied. The Exception Test for Work Nos. 9D and 9E is set out in paras. 9.6.32 to 9.6.40 in ES Appendix 9A: Flood Risk Assessment [APP-250] which concluded that the Exception Test was satisfied in both cases.</p> <p>The Flood Risk Assessment [APP-250] demonstrates that the Proposed Development (including areas within Flood Zones 2 and 3) will be safe from the risk of flooding through the implementation of various measures, including a Flood Emergency Response Plan. The latter will include plans to evacuate land at risk of flooding.</p>
WE.2.7	Applicants	<p>The development includes substantial earthworks, including a new platform at the PCC site.</p> <p>Please confirm if any landraise will be in FZ2 and FZ3. If this occurs, provide an assessment of the effects of this from displacement of potential floodplain storage and an explanation of why areas of lower risk are not appropriate for such works.</p>	<p>The PCC site is located on land which is currently in Flood Zone 1 and will remain in FZ1 following the construction of the Teesworks development platform. As there is no land raising within the Order Limits outside the PCC site, there will be no land raising of land in either FZ2 or FZ3 as part of the Proposed Development. No assessment of the displacement of potential floodplain storage is therefore required.</p>

## **APPENDIX GEN.2.2**

Other Development' Details				Stage 1: Within Zoi? (Y/N)																			Stage 2					Comments/ Justification	Status at Deadline 6 and affect on conclusions reached in the ES						
ID (new entries highlighted yellow)	Application Reference	Authority	Location	Applicant/Description	Approx. distance from PCC Site (km)	Site Area	Timescale of Development	Status	Tier	Traffic-related	Ecology								Air Quality	Landscap	Heritage	Water & Geology	Noise & Vibration	Progress to Stage 2?	Scale and nature of development likely to have a significant effect?	Major Development (Y/N)?	ES / Scoping Report submitted? (Y/N)			Overlap in Temporal Scope (Construction only)? (Y/N)	Other Factors	Progress to Stage 3/4?			
1 (NS)	Not yet submitted	PNIS	Application not yet submitted	Net Zero Teesside (Offshore): Offshore elements to be consented by Marine Licence including CO2 Export Pipeline below MHWS and geological store and associated facilities. <b>Please note: not shown on Figure 24-2, as planning application boundary is not yet known.</b>	0	Unknown	bp expects to submit the ES in Q4 2022 with a view to obtaining approval for the Development in 2024. Based on current schedule estimates, bp expects installation of the pipelines and seabed infrastructure (including manifolds) to commence in 2025 with drilling of the wells into the Endurance Store expected to commence in 2026. First CO2 injection is anticipated in 2027.	Not yet submitted	2															Y	Y	Y	Y	Unknown	NZT offshore elements	Y	Considered relevant to marine ecology only - scoped out by all other technical disciplines.	Submission of the ES has been delayed to Q4 202. Consequently installation and first operation will also be delayed. This however will not affect the cumulative assessment			
2	TR030002	PNIS	Land at Bran Sands, Teesside, on the South Bank of the River Tees.	York Potash Limited - The installation of wharf/jetty facilities with two ship loaders capable of loading bulk dry material at a rate of 12m tons per annum (dry weight). Associated dredging operations to create berth. Associated storage building with conveyor to wharf/jetty. Including a materials handling facility (if not located at Wilton) served by a pipeline (the subject of a separate application) and conveyor to storage building and jetty.	0	92.44 ha	Construction of the harbour facilities January 2017, with completion of the Phase 1 works expected in July 2018. It is the intention that all works will be completed and the Harbour Facilities will be operating at full capacity by 2024.	Approved	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Consented but construction not yet started. To ensure a worst case for assessment, assume that construction of the Harbour facilities will take place during the peak month of construction associated with the NZT Project. <b>Linked to IDs 27, 70 and 71.</b>	No status change that the Applicants are aware of.		
3	EN010082	PNIS	Land at the Wilton International Site, Teesside	Sembcorp Utilities (UK) Limited - Tees CCGP, a gas fired combined cycle gas turbine (CCGT) power station with a maximum generating capacity of up to 1,700 MWe (assuming carbon capture and storage requirements are met). The project will utilise existing Gas and National Grid connections.	3.9	800 ha	Two scenarios presented - both with construction beginning in 2019 and operation in 2022. Second option includes construction of a further 850 Mwe within five years of its commercial operation, finished in 2030.	Approved	1	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	Y	Y	Y	Y	N	Note Construction beginning in 2019 and operation in 2022 - plant should be operational prior to NZT construction beginning; 3.9km from PCC Site. Operational emissions to be considered.	Y	Major development, ES submitted	No status change that the Applicants are aware of.			
4	EN010051	PNIS	Dogger Bank Zone (North Sea), with cabling coming ashore between Redcar and Marske-by-the-Sea (Wilton complex, Redcar & Cleveland). Easting: 506535 Northing: 610896	Forewind Ltd. (formerly Dogger Bank Teesside B) - Project previously known as Dogger Bank Teesside A&B. Dogger Bank Teesside A & B is the second stage of Forewind's offshore wind energy development of the Dogger Bank Zone (Zone 3, Round 3). Dogger Bank Teesside A & B will comprise up to two wind farms, each with an installed capacity of up to 1.2GW, which are expected to connect to the National Grid at the existing National Grid substation at Lackenby, near Eston. It follows that Dogger Bank Teesside A & B could have a total installed capacity of up to 2.4GW Dogger Bank Teesside A & B is located within The Dogger Bank Zone which comprises an area of 8660 square kilometres (km2) located in the North Sea between 125 kilometres (km) and 290km off the UK North East coast. Note: the start of the offshore element has been labelled on Figure 24-1, the onshore elements are not labelled.	4.1	Teesside A: 560km2 / 216 sq. miles Teesside B: 593km2 / 229 sq. miles	Project Description ES Chapter indicates, for both projects (Teesside Project A & Teesside Project B): - Earliest construction start onshore: At consent award (subject to discharge of DCO conditions) - Earliest construction start offshore: 18 months after consent award - Latest construction start onshore and offshore: 7 years after consent award - Onshore construction duration window: Up to 36 months - Offshore construction duration window: Up to 6 years - Maximum onshore construction gap between the two projects (from first onshore construction finish to second onshore construction start): Up to 5 years - Latest construction finish onshore: 10 years after consent award - Latest construction finish offshore: 13 years after consent award	Approved	1	N	N	N	Y	N	Y	N	Y	Y	Y	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Main elements are offshore. To ensure a worst case for assessment, assume that construction of the Harbour facilities will take place during the peak month of construction associated with the NZT Project.	Y	Major development, ES submitted, overlap in construction periods	No status change that the Applicants are aware of.

5	R/2015/0393/RSM	Redcar and Cleveland	Stokesley Road, Guisborough	Bellway Homes Ltd, residential development (188 dwellings) with associated vehicular and pedestrian accesses including landscaping (resubmission), land at Stokesley Road - Guisborough.	9.3 7.1 ha	Online satellite imagery indicates that construction of this development has now been completed.	Approved 16/11/2015	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	Y	N - 188 dwellings - small scale	Y	Y	(Resubmitted previous (2013) ES)	N	Planning Statement states: "The current proposal is largely identical to the approved scheme, with the exception of a number of minor detail changes to the approved house types...All proposed works largely remain as previously approved, but with alterations to the approved house type designs."	N	Remote from the Site (9.3 km from PCC), not within the Zol for construction traffic and not likely to result in any other non-traffic related cumulative effects. Online satellite imagery indicates that construction of this development has now been completed.	No status change that the Applicants are aware of.
6	R/2019/0485/RMM1	Redcar and Cleveland	Land north of Kirkleatham business park and west of Kirkleatham Lane, Redcar	Galliford Try Partnerships, reserved matters application (appearance, landscaping, layout and scale) following approval of outline planning permission r/2016/0663/OOM for up to 550 residential units with associated access, landscaping and open space, land north of Kirkleatham business park and west of Kirkleatham Lane - Redcar	2.3 Unknown	Online satellite imagery indicates that construction of this development is ongoing. Timescales for completion unknown.	Approved 31/10/2019	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	Y	Y - 550 dwellings	Y	N	Y	Included in committed developments in TA	N	No ES/ EAR/ Scoping Report submitted with application. This development has been included in the future baseline for traffic and therefore traffic-related impacts and therefore is not considered separately in relation to (traffic related)	No status change that the Applicants are aware of.	
7	R/2019/0443/RMM	Redcar and Cleveland	Land north of Woodcock Wood and west of Flatts Lane, Normanby	Theakston Estates Ltd, reserved matters application following outline planning permission r/2016/0326/OOM for means of appearance, landscaping, layout and scale for 400 dwelling houses (granted on appeal reference app/v0728/w16/3158336), land north of Woodcock Wood and west of Flatts Lane, Normanby.	7.7 22.8 ha	Online satellite imagery indicates that construction of this development is ongoing. Timescales for completion unknown.	Approved 03/10/2019	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	Y	Y - 400 dwellings	Y	N	Unknown	This is a reserved matters application. Development has been considered with reference to the outline planning permission (R/2016/0326/OOM (see ID 18)) and excluded from consideration of traffic related cumulative effects.	N	Remote from the Site (>7km from PCC), no ES/EAR/scoping submitted; See ID 18 (previous outline application) below	No status change that the Applicants are aware of.	
8	R/2015/0540/RMM1	Redcar and Cleveland	Redcar Lane, Redcar	Bellway Homes NE, reserved matters application following outline planning permission r/2014/0455/OOM for means of appearance, landscaping, layout and scale for 126 dwelling houses, former Redcar & Cleveland college site - Redcar Lane, Redcar.	4.3 4.1 ha	Online satellite imagery indicates that construction of this development has now been completed.	Approved 27/11/2015	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	Y	N - 126 dwellings - small scale	Y	N	N	Not within traffic Zol. Linked to ID 15.	N	Nature and location of development such that cumulative effects not likely. No EIA Scoping Report or ES for this development.	No status change that the Applicants are aware of.	
9	R/2019/0403/FFM	Redcar and Cleveland	Caernarvon Close, Somerset Road, Cheddar Close, Avondale Close, Monmouth Road, Aberdare Road, Bridgend Close, Grangetown	Beyond Housing, demolition of 19 dwelling houses; hybrid application for full planning permission for refurbishment of 289 dwelling houses and alterations to existing road infrastructure to allow for new parking and open spaces; outline application for future residential development for 32 dwelling houses, dwellings and land at Caernarvon Close, Somerset Road, Cheddar Close, Avondale Close, Monmouth Road, Aberdare Road, Bridgend Close, Grangetown.	4.9 Unknown	Online information on the developer website indicates that construction commenced in October 2021. Timescales for completion are unknown.	Approved 21/01/2020	1	N	Y	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	Y	N	Y	N	Unknown	Just within Zol for traffic related noise; no construction traffic data available but considered unlikely to generate substantial volumes of construction traffic.	N	No EIA Scoping Report or ES available. Scale of development and distance from Proposed Development such that significant cumulative effects are considered unlikely.	No status change that the Applicants are aware of.	
10	R/2019/0150/FFM	Redcar and Cleveland	Land next to Kirkleatham Business Park, off Troisdorf Way, Kirkleatham	Priority Space, erection of 17 industrial units ranging in size from 116 sq.m. up to 210 sq.m. with new vehicular access and associated parking, land next to Kirkleatham Business Park, off Troisdorf Way, Kirkleatham.	3.5 1.56 ha	Unknown at present. Checked App Form, Planning Statement and DAS 14/12/2020. Decision notice states that the development shall not be begun later than the expiration of THREE YEARS from the date of this permission (July 2020).	Approved 12/07/2019	1	Y	Y	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	Y	N - due to nature of development	Y	N	Unknown	Transport impact considered to be insignificant as no TA/TS submitted in support of application.	N	Major development - site area > 1 ha Transport impacts considered unlikely to be substantial as no TA submitted. Nature of development and distance from the Proposed	No status change that the Applicants are aware of.	
11	R/2019/0045/FFM	Redcar and Cleveland	Land adjacent to SK Chilled Foods Ltd, Nelson Street, South Bank	SK Chilled Foods Ltd, proposed storage and distribution warehouse, with associated vehicle access and manoeuvring area, land adjacent to SK Chilled Foods Ltd, Nelson Street, South Bank.	4.9 4290 sq m	Unknown at present. Checked App Form and DAS 14/12/2020. Decision notice states that the development shall not be begun later than the expiration of THREE YEARS from the date of this permission (June 2019)	Approved 12/06/2019	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	Y	N - due to nature and relatively small scale (<1 ha)	N	N	Unknown	Transport impact considered to be insignificant as no TA/TS submitted in support of application.	N	Not major development; no scoping or ES submitted	No status change that the Applicants are aware of.	
12	R/2017/0876/FFM	Redcar and Cleveland	Wilton International, Redcar	Peak Resources Limited, construction and operation of a mineral processing and refining facility including ancillary development, car parking and landscaping, land at Wilton International Complex Redcar.	3.7 9 ha	The refinery would need to be ready to receive the ore concentrate towards the end of 2019 / early 2020. It is anticipated that it would take between 18 and 24 months to construct the facility, with construction commencing mid-2018. No end date given but the planning statement states that the Ngualla mine from which the rare earth concentrate is being sourced, has an estimated 30 years' worth of supply "therefore, the development proposals would provide a significant number of jobs and the operational jobs would be expected to	Approved 10/05/2018	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	Y	N	Y	Y	N	Major development - winning/ working of minerals, however construction should be complete and site operational before construction of Proposed Development. This development has been included as a committed development within the TA and therefore forms part of the baseline for the traffic - related assessments (construction).	N	Development already in existence/ expected to be completed prior to Proposed Development construction therefore forms part of the baseline. Major development - winning/ working of minerals	No status change. Assumed to be under construction.	



22	R/2019/0183/00M	Redcar and Cleveland	Land south of Spencerbeck Farm Normanby Road, Ormesby	Mr R Roberts, demolition of existing outbuildings to allow outline planning permission (with some matters reserved) for residential development (52 dwellings), land south of Spencerbeck Farm Normanby Road, Ormesby.	7.3 1.9 ha	No information in Planning Statement, Desktop Study or DAS - checked 17/12/2020.	Approved 20/01/2021	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	Unknown		N	Remote from the Site (>7km from PCC). No EIA Scoping or ES submitted; nature and scale of development not likely to result in significant cumulative effects with Proposed Development.	No status change that the Applicants are aware of.		
23 (NS)	Not yet submitted	Redcar and Cleveland	STDC Masterplan Area	South Tees Development Corporation (STDC) - South Tees Regeneration Master Plan covering 4,500 acres of land (South Tees Development Corporation, 2020). <b>Please note: due to this plan covering a large area it has not been included on Figure 24-2.</b>	0 Unknown	Not yet submitted, no info available	Not yet submitted	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Unknown	Unknown	No details available yet	N	Only those developments with at least a Scoping Report, Environmental Assessment Report or Environmental Statement (ES) available shall be considered for shortlisting.	The Master Plan is now now published however the assessment conclusions remain unchanged		
24	R/2017/0815/FF	Redcar and Cleveland	Kingsley Road & Shakespeare Avenue, Grangetown, TS6 7PW	Coast and Country Housing, extension to existing car park (14 additional spaces) including fencing (1.8m high), land at coast & country housing office corner of Kingsley Road & Shakespeare Avenue, Grangetown, TS6 7PW.	4.8 > 0.1 ha	Online satellite imagery indicates that construction of this development has now been completed.	Approved 12/01/2018	1	N	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	N	Y	Small extension to existing car park - small scale	N	Not major development; no EIA scoping or ES submitted. Nature and scale of development such that it is unlikely to result in significant cumulative effects with Proposed Development.	No status change that the Applicants are aware of.	
25	R/2019/0031/FFM	Redcar and Cleveland	Wilton International, Redcar	Tourian Renewables Ltd, construction and operation of a plastic conversion facility including office and welfare buildings, workshops, weighbridges and associated infrastructure, former Croda Site Wilton International, Redcar	3.1 1.1 ha	Online news articles indicates that construction commenced in March 2021 and is due to be completed in 2022.	Approved 09/04/2019	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	Y	>3km from PCC Site <b>Related to ID 28</b> - slightly different RLBs and Planning Statement states "Planning permission (R/2017/0730/FFM (ID 28) was granted for a Plastic Conversion Facility and associated infrastructure on the former Invista chemical plant at the Wilton site in January 2018. This proposal is for a similar PCF to that	N	No EIA scoping / ES submitted; over 3km from the PCC Site. Nature and scale of development not likely to result in significant cumulative effects with Proposed Development.	No status change that the Applicants are aware of.	
26	R/2018/0587/FFM	Redcar and Cleveland	Tees Dock Terminal, Teesport	ICL Tees Dock, refurbishment of redundant 'coal rail pit' for handling polysulphate products, potash conveyor, Tees Dock Terminal, Teesport.	1.9 8.9 ha	Online satellite imagery indicates that construction of this development has now been completed.	Approved 06/03/2019	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	Y	N	Y	N	N	N	N - refurbishment of existing Site/ previously developed	N	No scoping or ES submitted, small scale, 1.9 km from PCC Site	No status change that the Applicants are aware of.
27	R/2017/0906/00M	Redcar and Cleveland	Land between Wilton International and Bran Sands, Redcar	Sirius Minerals Plc, outline planning application for an overhead conveyor and associated storage facilities in connection with the York potash project, land between Wilton International and Bran Sands, Redcar.	0 62.8 ha	Unknown at present. Checked ES, Covering Letter, App Form, Planning Statement, DAS 14/12/2020. Decision notice states that the development shall not be begun later than the expiration of THREE YEARS from the date of this permission (April 2018)	Approved 30/04/2018	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Proximity to proposed development (adjacent to it). <b>Linked to IDs 2, 70 and 71.</b>	Y	Major Development (winning/ working of minerals), adjacent to Site, ES submitted (Note: Linked to IDs 2, 70 and 71.)	No status change that the Applicants are aware of.
28	R/2017/0730/FFM	Redcar and Cleveland	Wilton International, Redcar	Tourian Renewables Ltd, construction and operation of a plastic conversion facility including office and welfare buildings, workshops, weighbridges and associated infrastructure, former Croda Site Wilton International, Redcar	3.1 1.6 ha	Planning Statement states: "Subject to the granting of planning permission, construction activity for the first process line would last for approximately 9-12 months. There would also be several months commissioning period. After which the other three process lines would be constructed, each process line taking circa 12 months to construct, with several months commissioning. This will be confirmed prior to commencement of works on site along with further details on the construction methodology." (same as other Tourian Renewables Ltd permission above - R/2019/0031/FFM). Decision Notice states: "The	Approved 12/01/2018	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	N	>3km from PCC Site <b>Related to ID 25 above but not superseded by it - different RLBs</b>	N	No ES/ scoping submitted; over 3km from the PCC Site	No status change that the Applicants are aware of.	
29	R/2016/0563/FF	Redcar and Cleveland	Land bounded by Trunk Road and Tees Dock Road Grangetown	Rydberg Development Company Limited, construction and operation of a 12MWe peaking power generation plant including ancillary equipment and new vehicular access off trunk Road, land bounded by Trunk Road and Tees Dock Road Grangetown.	3.6 0.72 ha	Online satellite imagery indicates that construction of this development has now been completed.	Approved 03/11/2016	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	N	N	Similar to development ID 19 and ID 21 - <b>superseded by ID 19.</b>	N	See ID 19	No status change that the Applicants are aware of.
30	R/2016/0502/FFM	Redcar and Cleveland	Wilton International, Redcar	Procomm Site Services Ltd, erection of workshop, Wilton International Wilton Redcar.	3.3 3192 sq m	No information in App form or Planning Statement - checked 21/12/2020. Decision Notice states: "The development shall not be begun later than the expiration of THREE YEARS from the date of this permission (Oct 2016)".	Approved 21/10/2016	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	Unknown		N	Not major development; no EIA scoping or ES submitted	No status change that the Applicants are aware of.	



38	19/2161/FUL	Stockton-on-Tees	Lianhetech, Seal Sands, Seal Sands Road, TS2 1UB	Lianhetech, Erection of new plant, new buildings and extensions to existing buildings. Works to include Warehouse D Extension, Boiler House Structure, Amenities & Workshop Building, Drum Storage Workshop Extension, Amenities extension, 2 no. Warehouse buildings, Contractors cabins, Gate House and Weighbridge, Receivers, Driers, Extension to existing Tank Farm, Tanker Offloading stations, Process and control buildings, Installation of new and replacement cooling towers and industrial apparatus, Pipe Bridge, Swale and the demolition of old plant and buildings, Lianhetech, Seal Sands, Seal Sands Road, TS2 1UB.	3.4	4.15 ha	Decision notice Cond. 1 states "The development hereby permitted shall be begun before the expiration of THREE years from the date of this permission." No information re: timescale in Planning Statement, DAS, Env Risk Assessment or Transport Statement (checked 22/12/2020)	Approved 21/02/2020	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Unknown		N	Only those developments with at least a Scoping Report, Environmental Assessment Report or Environmental Statement (ES) available shall be considered for shortlisting.	Construction is complete. No change to the conclusions in the ES						
39	15/2187/FUL	Stockton-on-Tees	Plc Huntsman Drive, Seal Sands, Middlesbrough, TS2 1TT	Air Products Renewable Energy Limited, Proposed installation of a Gaseous Oxygen (GOX) Pipeline associated with Tees Valley 2 (TV2) Renewable Energy Facility (REF), Air Products Plc Huntsman Drive, Seal Sands, Middlesbrough, TS2 1TT.	2.6	1.5 ha	Planning Statement states "Following determination of the application, a construction period of three months is envisaged to complete the Scheme." Decision Notice Cond. 1 states "The development hereby permitted shall be begun before the expiration of THREE years from the date of this permission."	Approved 29/10/2015	1	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	Construction scheduled to be complete according to planning documentation.	N	Developments already in existence/ expected to be completed prior to Proposed Development construction should form part of the baseline.	No status change that the Applicants are aware of.				
40	15/2181/FUL	Stockton-on-Tees	North Tees Site Sabic UK Petrochemicals Seaton Carew Road, Port Clarence, Stockton-On-Tees, TS2 1TT	SABIC UK Petrochemicals Limited, Erection of new plants for supply of steam and compressed air including 3 boilers, 3 compressors, a water purification plant, storage bunds for chemicals. New pipelines to provide potable water and instrument air to the new plant, as well as to export steam and compressed air to the tank farm distribution system, North Tees Site Sabic UK Petrochemicals Seaton Carew Road, Port Clarence, Stockton-On-Tees, TS2 1TT.	3.3	2.22 ha	Online satellite imagery indicates that construction of this development has now been completed.	Approved 18/11/2015	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N - EIA not required but a 'non-statutory environmental assessment'	Construction scheduled to be complete according to planning documentation.	N	Developments already in existence/ expected to be completed prior to Proposed Development construction should form part of the baseline.	No status change that the Applicants are aware of.		
41	15/2799/FUL	Stockton-on-Tees	Impetus Waste Management, Huntsman Drive, Seal Sands, Stockton-on-Tees, TS2 1TT	Green North East Trading Bidco Limited, Construct and operate an extension to the existing Materials Recovery Facility (MRF) building to process material produced by the existing MRF operation, Impetus Waste Management, Huntsman Drive, Seal Sands, Stockton-on-Tees, TS2 1TT.	5.2	0.1 ha	Planning Statement/ ES states "(Construction) Works are currently proposed from March to October 2016" Decision notice states that the development shall not be begun later than the expiration of THREE YEARS from the date of this permission (Jan 2016). No further info available - checked PS/ES 15/12/2020.	Approved 08/01/2016	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	Construction scheduled to be complete according to planning documentation.	N	Developments already in existence/ expected to be completed prior to Proposed Development construction should form part of the baseline. Major development - waste	No status change that the Applicants are aware of.			
42	16/0195/VARY and subsequent application 20/2620/VARY (S73)	Stockton-on-Tees	Eutech Road, 100 Haverton Hill Road, Billingham, TS23 1PY	Mr Charles Everson, Section 73 application to vary condition no.4 (Environmental Impact Statement) of planning approval 13/2892/EIS - Development of materials recycling facility and production of energy from waste, including demolition of the existing offices and erection of new buildings, tanks and silos with access taken from the existing access at New Road, Billingham. The main building will be portal frame, profiled steel clad with stacks at a maximum height of 80m and 28m. (Residual wastes will be processed through an advance thermal treatment process, gasification, to produce renewable heat and power), Eutech Road, 100 Haverton Hill Road, Billingham, TS23 1PY.	9.5	Unknown	16/0195/VARY was approved 11/03/16 Decision notice states that the development shall be begun before the expiration of THREE years from the date of this permission. 20/2620/VARY Planning Statement states that the development will be begun before 18/02/17 and "the development hereby permitted shall be begun before the expiration of THREE years from the date of this permission" (conditions remaining as existing), noting that the consent was implemented in 2016. It states re: the current status of the development "At present, the works undertaken at site include demolition of the office building and pipework at the western site boundary and excavation of a large area in the centre of the Site to investigate relic foundations. It is understood that the adjacent land to the west has been	16/0195/VARY Approved 11/03/2016 20/2620/VARY Approved 25/01/2021	3	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Unknown	-	N	Remote from the Site - ~9.5km from PCC Site	No status change that the Applicants are aware of.	
43	H3.1 Low Grange Farm Strategic Site	Redcar and Cleveland	Low Grange Farm	Redcar & Cleveland Local Plan 2018, Up to 1,250 houses.	4.8	32 ha	"It is anticipated that the site would be partially built within the plan period, with the balance of development taking place after 2032."	Adopted	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Unknown	It appears that ID 67 is on this Site. ID 67 has been included in the 'other developments' shortlist.	N	Only those developments with at least a Scoping Report, Environmental Assessment Report or Environmental Statement (ES) available shall be considered for shortlisting.	No status change that the Applicants are aware of.



44	H3.2 Swan's Corner	Redcar and Cleveland	Swan's Corner	Redcar & Cleveland Local Plan 2018, Up to 128 houses.	9.3 7.7 ha	To be delivered within the plan period (i.e. up to 2032).	Adopted	3	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	Y	N	Y	N	Unknown		N	Remote from the Site - ~9.3km from PCC Site No clear, identified programme for delivery. Land allocations on their own have not been considered as there is no certainty that developers will come forward with projects within the timescale for the delivery of these sites, and the nature for such projects and their associated environmental effects are currently unknown	No status change that the Applicants are aware of.	
45	H3.5 Longbank Farm	Redcar and Cleveland	Longbank Farm	Redcar & Cleveland Local Plan 2018, Up to 320 houses.	8.2 21 ha	To be delivered within the plan period (i.e. up to 2032).	Adopted	3	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	N	Y	Y	N	Unknown		N	Remote from the Site - ~8.2km from PCC Site and land allocations on their own have not been considered - see detailed comment above (ID 44)	No status change that the Applicants are aware of.	
46	H3.6 Spencerbeck Farm	Redcar and Cleveland	Spencerbeck Farm	Redcar & Cleveland Local Plan 2018, Up to 61 houses.	7.4 2.4 ha	To be delivered within the plan period (i.e. up to 2032).	Adopted	3	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	Unknown		N	Remote from the Site - ~7.4km from PCC Site and land allocations on their own have not been considered - see detailed comment above (ID 44)	No status change that the Applicants are aware of.	
47	H3.8 Normanby High Farm	Redcar and Cleveland	Normanby High Farm	Redcar & Cleveland Local Plan 2018, Up to 150 houses.	6.5 10 ha	To be delivered within the plan period (i.e. up to 2032).	Adopted	3	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	Unknown		N	Remote from the Site - ~6.5km from PCC Site and land allocations on their own have not been considered - see detailed comment above (ID 44). This allocation appears to cover ID7.	No status change that the Applicants are aware of.	
48	H3.9 Land at Former Eston Park School	Redcar and Cleveland	Land at Former Eston Park School	Redcar & Cleveland Local Plan 2018, Up to 100 houses.	5.7 3 ha	To be delivered within the plan period (i.e. up to 2032).	Adopted	3	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	Unknown		N	Land allocations on their own have not been considered - see detailed comment above (ID 44)	No status change that the Applicants are aware of.	
49	H3.10 Corporation Road	Redcar and Cleveland	Corporation Road	Redcar & Cleveland Local Plan 2018, Up to 86 houses.	2.5 2.4 ha	To be delivered within the plan period (i.e. up to 2032).	Adopted	3	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	Y	N - Development of 86 houses . Relatively small development.	Y	N	Unknown	No details available yet	N	Land allocations on their own have not been considered - see detailed comment above (ID 44)	No status change that the Applicants are aware of.
50	H3.14 Land at Mickle Dales	Redcar and Cleveland	Mickle Dales	Redcar & Cleveland Local Plan 2018, Up to 100 houses.	5.2 4.3 ha	To be delivered within the plan period (i.e. up to 2032).	Adopted	3	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	Unknown		N	Land allocations on their own have not been considered - see detailed comment above (ID 44)	No status change that the Applicants are aware of.	
51	H3.15 West of Kirkleatham Lane	Redcar and Cleveland	Kirkleatham Lane	Redcar & Cleveland Local Plan 2018, Up to 550 houses.	2.3 23 ha	To be delivered within the plan period (i.e. up to 2032).	Adopted	3	N	N	N	Y	N	Y	N	Y	N	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	Y		Refer to development IDs 6 and 17 above		Y	Refer to development IDs 6 and 17 above	No status change that the Applicants are aware of.		
52	MWP8 South Tees Eco-Park	Redcar and Cleveland	South Tees Eco-Park	Tees Valley Joint Minerals and Waste Development Plan Documents, A site of approximately 27 hectares is allocated for the development of the South Tees Eco-Park.	3.4 27 ha	Development is anticipated to be provided between 2016 and 2021.	Adopted	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Development anticipated to be provided between 2016 and 2021.	N	Land allocations on their own have not been considered - see detailed comment above (ID 44), and development should be constructed prior to construction of NZT	No status change that the Applicants are aware of.	
53	MWC9 Sewage Treatment	Redcar and Cleveland	Bran Sands Regional Sludge Treatment Centre	Tees Valley Joint Minerals and Waste Development Plan Documents, Development involving the extension or upgrade of existing sewage treatment facilities, including at the Bran Sands Regional Sludge Treatment Centre (Redcar and Cleveland) will be supported.	0.6 Unknown	Unknown/ Not Provided	Adopted	3	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Construction should be complete - scheduled to be completed in 2016.	N	Close to PCC Site but development should be complete prior to NZT construction. Developments already in existence/ expected to be completed prior to Proposed Development construction should form part of the baseline.	No status change that the Applicants are aware of.	



64	Policy EMP4 - Specialist Industries	Hartlepool	Hartlepool Local Plan, 44 hectares reserved for potential expansion of existing occupier, West of Seaton Channel. Please note, as this policy area includes a range of developments which have not yet submitted planning applications.	4.8	Total site area 76.7 hectares: area of undeveloped land 44.0 hectares	Unknown/ Not Provided	Adopted	3	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	N	Y		Y	N	Unknown	N	Land allocations on their own have not been considered - see detailed comment above (ID 44)	No status change that the Applicants are aware of.			
65	Policy EMP4 - Specialist Industries	Hartlepool	Hartlepool Local Plan, 4.1 hectares available for development as a waste management and recycling facility, Graythorp Waste Management	5.3	4.1 ha	Unknown/ Not Provided	Adopted	3	N	N	N	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	N	Y		Y	N	Unknown	N	Adjacent to ID 36 RLB but not covering it. Land allocations on their own have not been considered - see detailed comment above (ID 44)	No status change that the Applicants are aware of.			
66	R/2019/0427/FM	Land at Former South Bank Works; Grangetown Prairie; British Steel and Warrenby Area	South Tees Development Corporation (STDC): Full planning application: Demolition of structures and engineering operations associated with ground preparation and temporary storage of soils and its final use in the remediation and preparation of land for regeneration and development	0	The total land acquired= 600 ha. 364 ha for this development.	Condition 1 states "The development shall not be begun later than the expiration of THREE YEARS from the date of this permission." (Sep 2019) No further info available at present - Planning Statement checked 17/12/2020.	Approved 27/09/2019	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Unknown	Proximity to Site (adjacent to it). Potential for remediation works to take overlap with some of the construction works for the Proposed Development.	Y	There is potential for the remediation works to overlap with the construction of the Proposed Development, resulting in potential cumulative impacts associated dust, noise, visual impacts construction traffic and traffic-related impacts.	No status change that the Applicants are aware of.			
67	R/2014/0372/OOM	Land at Low Grange Farm, South Bank	The Lady Hewley Charity Trust Company Ltd & Taylor: Outline application for residential development (up to 1250 dwellings) (all matters reserved)	5.5	32.2 ha	Decision notice Condition 2 states: "The development shall be begun five years from the final approval of the reserved matters referred to in Condition (1) or, in the case of approval on different dates, the final approval of the last such matter to be approved." Planning Statement states re: timescale: "It is envisaged that should outline planning permission be granted the subsequent reserved matters	Approved 31/03/16	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	N	Y	Y - 1250 dwellings, covering large area	Y	N	Y	Assume overlap in construction period for worst case. Planning Statement states: "the proposals will not result in unacceptable levels of soil, air, water, or noise pollution". Note: linked to ID 43 - on Redcar and Cleveland Allocated Site for housing.	N	Given the nature of the development (residential) and it's relative distance from the Proposed Development, significant cumulative effects are considered unlikely.	No status change that the Applicants are aware of.	
68	R/2008/0671/EA	Land at Teesport, Tees Dock Rd, Grangetown	MGT Teeside Ltd: Full planning application: Proposed construction of a 300 Mw biomass fired renewable energy power station on land adjacent to the main southern dock at Teesside on the south bank of the River Tees.	2.8	14 ha	NTS states: "If consented the proposed plant could be operational by 2012. The plant would have an operational lifetime of at least 25 years."	Approved 15/07/2009	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Construction scheduled to be completed prior to Proposed Development construction according to planning documentation, however this is not the case - they've experienced delays and the plant is now scheduled to become operational on 10/02/2021. This development has been considered under the assumption that construction could resume at any time (i.e. worst case = overlap in construction periods).	Y	Construction scheduled to be completed prior to Proposed Development construction according to planning documentation, however this is not the case - they've experienced delays and the plant is now scheduled to become operational on 10/02/2021. This development has been considered under the assumption that construction could resume at any time (i.e. worst case = overlap in construction periods).	No status change that the Applicants are aware of.
69	R/2006/0433/OO	Land at Teesport, Grangetown	P D Teesport: Outline application for development of a container terminal	1.3	Unknown.	It is intended that Phase I will be operational by 2010 and Phase II will be completed by 2014.	Approved 04/10/07	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N - small area	Y	Y	Unknown	Construction scheduled to be complete according to planning documentation - but application superseded by ID 79 (not yet submitted).	N	Application superseded by development ID 79 (not yet submitted).	No status change that the Applicants are aware of.		
70	R/2018/0139/VC	Land at Wilton International Complex	Sirius Minerals: Full planning application: Variation of condition 2 (approved plans) of planning permission R/2014/0626/FFM to allow for minor material amendments to the approved layout and size of buildings; site mounding; on-site attenuation ponds, Swales and internal roads following the progression of more detailed design engineering	1.7	37.5 ha	Planning Statement, ES and NTS checked 15/12/2020 - no information re: timescale included. Condition 1 of the decision notice states that the development shall be commenced prior to the 14 August 2018.	Approved 23/05/2018	1	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	N	Y	Y	Unknown	<b>Linked to IDs 2, 27 and 71 (York Potash)</b> This is a variation of condition. The original application (R/2014/0626/FFM) was for the Materials Handling Facility ('MHF') element of the York Potash project - a granulation and storage facility at Wilton on Teesside that will receive and handle the polyhalite transported via the MTS. It was granted in September 2014 (Cond. 1: The development shall not be begun later than the expiration of THREE YEARS from the date of this permission.) ES states 41 month (~3.5 year) construction period.	N	Major development (winning/working of minerals), ES submitted, in close proximity to Site but: variation of Condition (minor amendments)	No status change that the Applicants are aware of.		







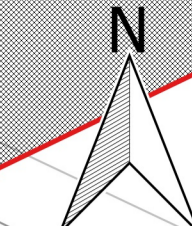
97	20/1257/OUT	Stockton on Tees	Triangular Piece Of Land Bounded By Belasis Avenue/Central Avenue And Cowpen Lane (Former Ici Offices) Billingham TS23 1LA	Outline planning permission with some matters reserved (Appearance, Landscaping, Layout and Scale) for the erection of buildings for office, research and development, manufacturing and storage (Use classes B1, B2 and B8) with associated boundary enclosure and the closure of part of Belasis Avenue. Identical application to one approved in 2019; permission sought for an extended implementation period	10	3.6	Phase 1 of two phased development. Condition 1 states "The development hereby permitted shall be begun either before the expiration of nine years from the date of this permission, or before the expiration of two years from the date of approval of the last of the reserved matters to be approved, whichever is the latest."	Granted	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	N	Y	Y	N	Unknown	N	Unknown	Outside of the study area of traffic related air quality and noise impacts.	N	Relatively small site, remote the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.		
98	21/1092/FUL	Stockton on Tees	Land At Macklin Avenue Cowpen Lane Industrial Estate Billingham TS23 4BY	Erection of 25no. industrial units for B2/B8 use with associated parking	8.6	0.8	Granted in December 2021. No detail are provided for the duration of the construction phase.	Granted	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	Unknown	N	Unknown		N	Small site, distant from the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.		
99	21/2896/FUL	Stockton on Tees	Land North Of Caswells Lagonda Road Cowpen Lane Industrial Estate Billingham TS23 4JA	Erection of 22 light industrial/employment units	8.6	0.8	Granted in March 2022. No detail are provided for the duration of the construction phase.	Granted	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	Unknown	N	Unknown		N	Small site, distant from the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.		
100	20/2804/REM	Stockton on Tees	Car Park Navigation Way Thornaby TS17 6QA	Reserved matters application for appearance, landscaping, layout and scale for the erection of 117 new build houses consisting of 67 two bed houses, 44 three bed houses and 6 four bed houses	10	3.98	Granted in June 2022. No detail are provided for the duration of the construction phase. A CEMP will be submitted prior to commencement of the development	Granted	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	N	Y	N	Y	N	N	N	N	N	N	Y	N	Unknown	N	Unknown		N	Relatively small site, distant from the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.		
101	22/0401/NAJ	Middlesbrough	Former Coal Depot, Commercial Street	Construction of 10No B2/B8 warehouses	8.6	0.27	timescales are not provided in the application material. The application would likely be required to commence within 3 years of a planning approval.	Pending	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	Unknown	N	Unknown		N	Small site, relatively remote from the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.		
102	20/0764/FUL	Middlesbrough	Boho X Lower Gosford Street Middlesbrough	Erection of 7 storey office building incorporating lecture theatre, cafe, swimming pool, gym, bar/event space with associated landscaping, public realm, cycle store and car parking	8.6	0.77	Timescales for the construction phase are not provided within the application material. Condition 1 states "The development to which this permission relates must be begun not later than the expiration of three years beginning with the date on which this permission is granted."	Granted	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	Unknown	N	Unknown		N	Small site, relatively remote from the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.	
103	21/0740/FUL	Middlesbrough	Former Cleveland Scientific Institute, Corporation Road, Middlesbrough, TS1 2RQ	15 storey tower block comprising 131no. apartments and 4no commercial units with associated cycle parking and refuse facilities	8.7	0.07	No details of the construction duration are provided. Condition 1 states that the development shall not be begun later than the expiration of THREE YEARS from the date of this permission.	Pending	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Unknown	N	Unknown		N	Small site, relatively remote from the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	The application was withdrawn on July 26.		
104	20/0289/FUL	Middlesbrough	Land South Of Union Street Middlesbrough	Erection of 145 residential dwellings with associated access, parking, landscaping and amenity space	9.4	3.98	Construction of the development will be carried out in six phases with phase 1 infrastrucutre delivery currently underway.	Granted	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	Y	Relatively small site, relatively remote the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.			
105	19/0516/RES	Middlesbrough	Land Off Alan Peacock Way, Prissick Base, Near Ladgate Lane/Marton Avenue, Middlesbrough	Reserved matters application for the erection of 350 dwellings and associated works	9.2	11.82	The developement is partially complete. The final phases of the are currently under construction. It is likely that the developement will be complete prior to construction of the Scheme.	Granted	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Unknown	N	N		N	Relatively large site, but remote from the Proposed Development and no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.		
106	R/2021/0281/FM	Redcar & Cleveland	Land Between Imperial Avenue And Tilbury Road, South Bank Industrial Estate, South Bank	Magnum Investments:CONSTRUCTION OF 37 FACTORY UNITS (USE CLASS B2/B8)	5.3	1.1	No details of construction duration and phasing have been provided in the submitted application material. Condition 1 states: "The development to which this permission relates shall be begun not later than three years [14/10/2024]from the date of decision.	Granted	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	Unknown	N	Unknown		N	Small site, relatively remote from the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.

107	R/2019/0439/FE	Redcar & Cleveland	Land At Crow Lane, Adjacent To Old Hall Farm And (A1053) Greystones Road, Old Lackenby, Eston	Installation Of An Energy Storage Facility (Up To 50 Mw), New Access Track And Associated Ancillary Equipment And Components (Amended Scheme)	5.1	0.8	This is an alternate application to Site ID 20. The construction period is anticipated to last no longer than 12 months. Once installed, there is minimal on-site activity required during the plant life-cycle. The facility will be remotely operated and access will typically only be required for monthly inspections and bi-annual servicing to take place. Decision notice states that the development shall not be begun later than the expiration of THREE YEARS from the date of this permission.	Granted	1	Y	Y	N	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	N	N	Y	N	Y	N	Unknown		N	Small site, relatively remote from the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.	
108	R/2020/0025/NNM	Redcar & Cleveland	Land To The South Of Marske By The Sea Bounded By Longbeck Road, A1085 And A174 Redcar	Convenience Store, Primary School, Childrens Day Nursery, Gp Surgery/Pharmacy, Community Hall, Petrol Filling Station, Drive Thru Restaurant, Public House And Hotel Following Approval On Appeal Of Outline Planning Permission R/2013/0669/Oom	6.8	50.4	Reserved matters application for ID 109	Pending	1	N	N	N	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Unknown		N	Relatively remote from the Proposed Development (6.8 km from PCC), not within the Zol for construction traffic and not likely to result in any other non-traffic related cumulative effects.	No status change that the Applicants are aware of.	
109	R/2013/0669/OOM	Redcar & Cleveland	Land To The South Of Marske By The Sea Bounded By Longbeck Road, A1085 And A174 Redcar	Outline Application For Up To 1000 Dwellings Together With Ancillary Uses And A Neighbourhood Centre, Park- And-Ride Car Park; Petrol Filling Station; Drive-Thru; Public House/Restaurant And 60 Bed Hotel With Details Of Access	6.8	50.4	The development will be delivered in phases based on the assumption that 50 dwellings will be delivered each year for over 14 years.	Approved 20 July 2017	1	N	N	N	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y		N	Relatively remote from the Proposed Development (6.8 km from PCC), not within the Zol for construction traffic and not likely to result in any other non-traffic related cumulative effects.	No status change that the Applicants are aware of.
110	R/2021/0019/OOM	Redcar & Cleveland	Land West Of Kirkleatham Lane Redcar	Homes England; Outline application for residential development with associated access, landscaping and open space consisting of; A) 279 residential units (class C3) or; B) 204 residential units (class C3) with 75 assisted living units (delivered as class C2 or C3)	3.1	11.3	Outline application for phase 2 of a wider residential development for 550 homes. A reserved matters application and subsequent discharge of condition applications will be submitted prior to commencement of the development.	Approved 11 January 2021	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	N	Y	Y	N	Y	N	Unknown		N	Only those developments with at least a Scoping Report, Environmental Assessment Report or Environmental Statement (ES) available shall be considered for shortlisting.	No status change that the Applicants are aware of.
111	R/2020/0489/FFM	Redcar & Cleveland	Land South Of Redcar Road North Of 21 - 77 South Terrace South Bank	Residential Development Of 28 Dwellings Comprising Of 25 Bungalows And 3 1.5 Storey Houses With Associated Highway Works; New Vehicular And Pedestrian Accesses And Landscaping	4.9	0.79	Under construction. Expected to be completed prior to commencement of construction of the DCO	Approved 21 January 2021	1	N	N	N	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	N	N	Y	N	Y	N	N		N	Small site, relatively remote from the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.
112	R/2022/0306/FE	Redcar & Cleveland	Land At Redcar Bulk Terminal Redcar Bulk Terminal Redcar	Installation And Operation Of A Site Batch Ready Mix Concrete Plant And Ancillary Facilities For A Temporary Period	0	0.34	Under construction	Approved 25 May 2022	1	N	N	N	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Assumed that construction will be completed once Proposed Development is due to commence construction.	N	Only those developments with at least a Scoping Report, Environmental Assessment Report or Environmental Statement (ES) available shall be considered	No status change that the Applicants are aware of.	
113	R/2022/0242/FE	Redcar & Cleveland	Dorman Point Teesworks Redcar	Teesworks: Erection Of A LV Substation And Associated Hardstanding	5.2	0.8	Under construction	Approved 22 October 2021	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	N	Y		N	Relatively small site, remote the Proposed Development, no requirement for EIA. Only those with a submitted EIA Scoping Report or ES are considered for shortlisting.	No status change that the Applicants are aware of.		
114	R/2022/0343/ESM	Redcar & Cleveland	Land At South Bank Off Tees Dock Road South Bank	South Tees Development Corporation: Application For The Approval Of Reserved Matters, Namely Appearance, Landscaping, Layout And Scale In Respect Of A Class B2 Manufacturing Unit With Ancillary Offices, Parking, Servicing, And Landscaping Following Approval Of Outline Planning Permission R/2020/0357/OOM	3.6	36.4	Details of construction phasing will be submitted to and approved by the local planning authority before construction commences.	Approved 16 June 2022	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Unknown	Refer to ID 73.	Y	Refer to ID 73. Scheme already considered in cumulatives assessment submitted with DCO Application.	No status change that the Applicants are aware of.
115	R/2022/0355/FFM	Redcar & Cleveland	Land At South Bank Off Tees Dock Road South Bank	South Tees Development Corporation: Erection Of Industrial Facility (Use Class B2/B8), Associated Structures, Hardstanding And Landscaping Works	3.6	5.83	Standalone application for 5.83 hectares of land outside the Teesworks outline application boundary. This site will be constructed alongside ID 115	Approved 16 June 2022	1	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Transport note included on planning portal indicates that that all trips associated with this development have already been assessed under ID 114.	Y	Not in itself EIA development, but associated with ID 114 which is EIA development. Included on a worst case basis.	No status change that the Applicants are aware of.	
116	R/2022/0002/FFM	Redcar & Cleveland	Land Between The A1085 And The Northumbrian Water Treatment Works At Bran Sands	Anglo American Woodsmith Ltd: Engineering Works For The Installation Of 32 Conveyor Footings Along Part Of The Conveyor Route Previously Approved Under Planning Permission R/2017/0906/OOM	0	7.09	Early phase engineering for Site ID 27. Installation of the conveyor belt will be subject to a separate application. The duration of construction is determined. Approximately 80 HGV movements in total are anticipated during construction.	Pending	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Unknown		N	Only those developments with at least a Scoping Report, Environmental Assessment Report or Environmental Statement (ES) available shall be considered for shortlisting.	No status change that the Applicants are aware of.		

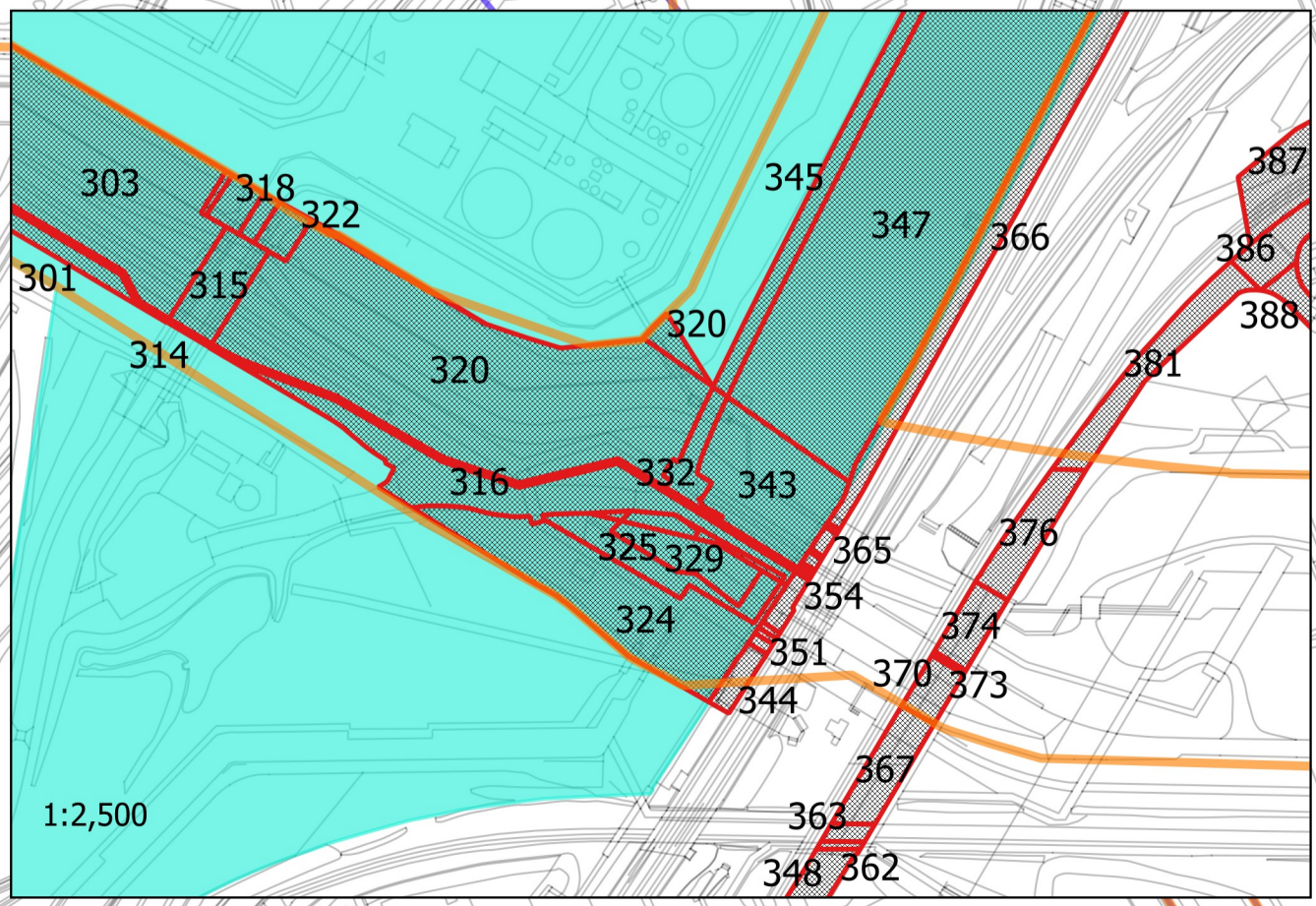
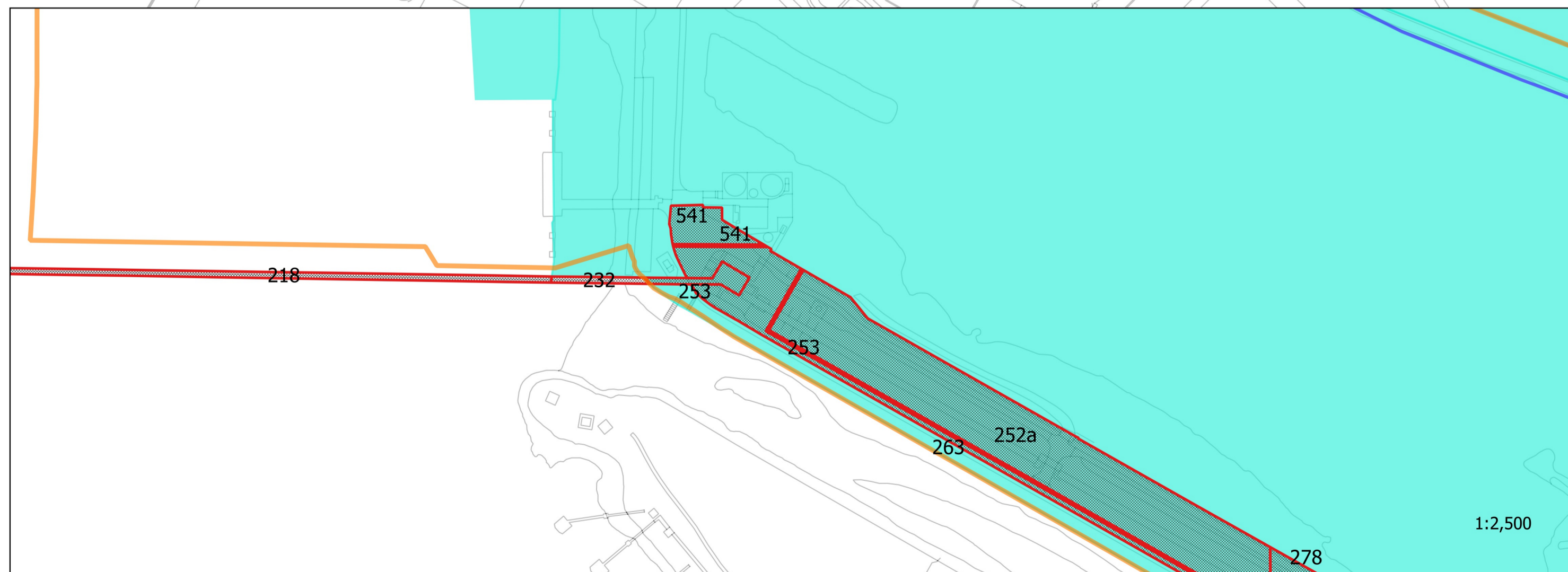




## **APPENDIX GEN.2.3**



- AA Interests
- DCO (AA/YPL)
- Outline Planning Consent (AA/YPL)
- LDC
- NZT Revised Limits (Aug 22)



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C	15/08/22	DR	WW	WW
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REV	DATE	BY	CHKD	APPD



The Woodsmith Project | Resilience House | Laka View | Scarborough | YO11 3TB | North Yorkshire  
T: +44 (0) 1723 470010 | W: www.angloamerican.com

Project: NZT DCO Land Plans (D6)  
Net Zero and Anglo American (AA) Key Interface Areas

SCALE @ A1: 1:5,000

## **APPENDIX GEN.2.13**



Department for  
Business, Energy  
& Industrial Strategy

# Carbon Capture, Usage and Storage

An update on the business model for  
Transport and Storage

January 2022



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Any enquiries regarding this publication should be sent to us at: [CCUSBusinessModelsUpdate@beis.gov.uk](mailto:CCUSBusinessModelsUpdate@beis.gov.uk).

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# Disclaimer

This update sets out further details on the government's current proposals on potential business models for carbon capture, usage and storage ('CCUS'). The proposals, as set out in the document, in whatever form they are expressed, are indicative only and do not constitute an offer by government and do not create a basis for any form of expectation or reliance.

The proposals are not final and are subject to further development by the government, and approval by Ministers, in consultation with relevant regulators and the devolved administrations, as well as the development and Parliamentary approval of any necessary legislation, and completion of necessary contractual documentation. We reserve the right to review and amend all provisions within the document, for any reason and in particular to ensure that proposals provide value for money (VfM) and are consistent with the current subsidy control regime.

This update takes into account engagement that has taken place during 2021 since publication of the Carbon Capture, Usage and Storage Business Models in the December 2020 and May 2021 documents. This includes engagement with industry and relevant regulators.

BEIS will continue such engagement as it works to refine its proposals, including engagement with the devolved administrations, to ensure that the proposed policies take account of devolved responsibilities and policies across the UK.

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# List of Annexes to this document

**Annex A:** Updated draft heads of terms T&S Regulatory Investment (TRI) Model: Economic Licence

**Annex B:** Draft heads of terms for the Revenue Support Agreement (RSA)

**Annex C:** Updated draft heads of terms for the Government Support Package (GSP)

**Annex D:** Draft heads of terms for the Liaison Agreement (LA)

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# Section 1: Introduction

In December 2020 and May 2021, we published updates (referred to here as the December 2020 document and the May 2021 document) on a Transport and Storage ('T&S') business model ('T&S Regulatory Investment (TRI) model'). The TRI model consists of both the regulatory model and other support arrangements which will facilitate investment in T&S infrastructure. The purpose of this document is to set out further details about the TRI model, reflecting work undertaken since May 2021, and includes the consideration of information provided in response to consultations on the duties and functions of the Regulator for CO<sub>2</sub> T&S and establishing an offshore decommissioning regime for CO<sub>2</sub> T&S which were published in August 2021.

In November 2020, the Prime Minister set out his ambition that the UK will become a world-leader in technology to capture and store harmful emissions away from the atmosphere, with a ambition to remove 10 million tonnes (Mt) of carbon dioxide (CO<sub>2</sub>) by 2030. In October 2021, the government's Net Zero Strategy expanded on this ambition. The UK's ambition is to capture and store 20-30 Mt of carbon emissions per year by 2030, with a further binding target to reach net zero carbon emissions by 2050. Carbon emissions will be captured from across the economy, including 6 Mtpa of industrial CO<sub>2</sub> emissions by 2030, increasing to 9 Mtpa by 2035.

For CCUS to be a key technology in supporting the government to achieve its net zero targets, there is a need to raise around £15 billion in private investment to construct and deliver the early phases of the CCUS T&S assets. This private investment needs to be raised between now and the end of the Sixth Carbon Budget period. This is why the TRI model is so crucial to delivering the government's Net Zero targets: it will be a primary driver of private investment into the CCUS T&S infrastructure.

The government is already taking steps to deliver these targets with the support of CCUS. Recently the government announced confirmation of those clusters which it intends to take forwards to Track 1 negotiations following Phase 1 of the Cluster Sequencing process, with the aim of deploying the two successful clusters by the mid-2020s.

The key objectives for the TRI model and their implications for the design of the TRI model were set out in the December 2020 document and are summarised again below:

## *Attracting investment in T&S networks to establish a new CCUS sector*

Establishing a commercial framework that enables and supports stable investment in CO<sub>2</sub> T&S networks that are likely to have long operating lives and provides investors with a clear sight of the long-term revenue model to ensure they can earn a reasonable regulated return on their investment.

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## *Enabling low-cost decarbonisation in multiple sectors*

Balancing the need for anticipatory investment to address future demand on the T&S network with the economic attractiveness of the T&S network to near term users. Each T&S network must be able to accommodate multiple and different types of users with varying demand profiles and be sufficiently flexible to adapt to different growth profiles.

## *Developing a market for carbon capture – a long-term vision*

Establishing an Economic Regulatory Regime (ERR) that provides sufficient flexibility to allow for future CO<sub>2</sub> market expansion (including NPT CO<sub>2</sub>) whilst ensuring affordability and VfM for the users.

We are developing the TRI model with an expectation that the T&S infrastructure will support a thriving CCUS market, with a diverse user base, well beyond 2050. Given this, as the market develops, we expect allocation of risk to change over time. This is because we expect higher levels of utilisation of T&S infrastructure supported by an increasing CO<sub>2</sub> price/taxes (both domestically and internationally), and the technology and its use becoming established at scale and better understood. This will lead to the market becoming sufficiently developed to mitigate T&SCo's exposure to financial risk, including the potential for market-based products (e.g. insurance). Therefore, arrangements set out in this update for managing T&SCo's financial risk are primarily focused on the TRI model arrangements that we consider are necessary to establish the market and allow it to grow to meet our CO<sub>2</sub> storage ambitions by 2030. We expect the need for these arrangements to diminish over time.

This document broadly follows the same format as the May 2021 document. We include two new sections which were not addressed in the May 2021 document: (1) section 8, where we set out our minded to position to establish a Special Administration Regime for CO<sub>2</sub> T&S and (2) section 9, where we provide an update on our views on decommissioning of CO<sub>2</sub> T&S infrastructure. In addition, the annexes of this document include:

- updated draft heads of terms for the economic licence (last published in December 2020) (Annex A,);
- draft heads of terms for the Revenue Support Agreement (RSA), which, as set out in section 6, would set the terms for the RSA Counterparty to provide Revenue Support in certain specified circumstances (Annex B); and
- updated draft heads of terms for the Government Support Package (GSP) (last published in December 2020) which, as outlined in section 7, consists of the Supplementary Compensation Agreement (SCA), and Discontinuation Agreement (Annex: C); and
- draft heads of terms for the Liaison Agreement (LA), which sets out proposed terms for the relationship between government and T&SCo, including in relation to proposed changes to project documents or variations to the T&S network (Annex D).

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## Section 2: The Role of T&SCo

The TRI model set out in our May 2021 document envisaged that T&SCo would have the following responsibilities:

- development, construction, financing, operation, maintenance, expansion, and decommissioning of the T&S network;
- ownership of the onshore and offshore transportation network, and obtaining relevant regulatory approvals for operation of onshore and offshore transportation and offshore storage sites;
- operation of the T&S network to ensure the operational parameters are within agreed specified limits, managing network access and performing network planning and administrative tasks (such as those set out in section 6 (Revenue Model));
- review of the CO<sub>2</sub> metering and compositional analysis equipment installed by the users at the point of connection<sup>1</sup>; and
- ensuring that the transportation and long-term storage of CO<sub>2</sub> is safe, efficient, and compliant with defined requirements.

We have continued to develop our views on aspects of the TRI overarching framework following the May 2021 document, including on:

- delivery model;
- asset ownership;
- network planning; and
- system operation.

This section sets out further detail on the current position on the above issues as well as where further work is required to enable a detailed decision.

### Delivery model

We remain of the view that a private sector delivery model (initially supported by targeted forms of government support) is the preferred approach for the delivery of the T&S network. We believe that this will enable CCUS to be delivered taking advantage of the greater speed of development and cost efficiency that can come with projects developed in the private sector, and the work already undertaken by the promoters of clusters. We believe that it is preferable to develop a wider regulatory system and a contractual framework to allow the private sector to

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<sup>1</sup> We are minded to adopt a similar approach to that used in other regulated networks. Given this, we consider that the T&S network user will be responsible for ensuring the CO<sub>2</sub> entering the transportation system meets the required quality specification of the T&S network. However, the T&SCo (as licensee/storage permit holder) will be responsible for ensuring the CO<sub>2</sub> injected into the storage site complies compositional requirements set out in the licence/permit.

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develop CCUS. Such a model has been effective in driving investment volumes and efficiency in network industries in the UK over the last 30 years, and consequently under this model we anticipate costs and risks to reduce in the CCUS sector as it matures and in combination with, for example, a rising carbon price.

We anticipate that knowledge and expertise from the UK's well-developed oil and gas sector and considerable experience developing and operating economic regulatory arrangements will be leveraged in the development of the UK's CCUS infrastructure.

Government recognises that the provision of capital funding via the CCS Infrastructure Fund (CIF) to T&SCo during construction may be required to support the development of T&S networks and to help mitigate risks during the initial settlement period as utilisation of the network is growing. Alongside the development of the TRI model, we are considering the different forms of funding which the CIF could utilise, including grants, loans, and equity<sup>2</sup>.

Government also recognises that as well as funding requirements there may be a need for targeted public sector support for financing T&SCo (including either debt or equity) that may arise at certain points in T&SCo's lifetime. For example, the UK Infrastructure Bank (UKIB) as a component of the government's broader infrastructure strategy, can co-invest with the private sector to enable and accelerate the delivery of UK projects that are consistent with its mission to tackle climate change and support regional and local economic growth. Individual investment decisions will be made independently by UKIB, in line with its objectives.

## Asset ownership

We continue to consider T&SCo owning both the onshore and offshore networks/systems to be the most appropriate model of ownership, particularly in the early phase of the development of this market when initial decisions are made around cluster sequencing and allocation of support to T&S network users – e.g.: Industrial Carbon Capture (ICC) contracts, Low Carbon Hydrogen (LCH) contracts, Dispatchable Power Agreements (DPA), and Bio-Energy with CCS (BECCS) contracts.

This is because it is currently thought that T&SCo is best placed to negotiate and develop solutions for resolving the commercial and operational interface risks between the different T&S elements of the infrastructure. Further, we consider that this integrated ownership model should make it easier for both government and potential network users to engage with an integrated T&SCo and therefore reduce delivery lead times and commercial complexity for the user and for government.

While T&SCo will be expected to own both the onshore and offshore networks/systems, it is recognised that applying an accounting separation across assets will be beneficial for enabling

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<sup>2</sup> As with all contractual arrangements entered into under the TRI-model, any decision to award CIF funding is subject to government satisfaction that subsidy control requirements have been met, government is comfortable with any balance sheet implications, all relevant statutory consents have been completed, and government is satisfied that CIF funding represents VfM for users, the consumer and the taxpayer in the context of other government support mechanisms.

the business model to adapt over time. For instance, accounting separation should facilitate the development of charging structures as well as expansion of the network. It also provides flexibility towards accommodating different network structures in the future. It is therefore expected that T&SCo will be required to provide separated accounts for key segments of its value chain, (e.g. onshore transport, offshore transport, storage and system operation). However, we would not require T&SCos to have RABs separated on this basis.

Some industry stakeholders have argued that there could be benefits to allowing a separation of ownership between assets in the future. It is recognised that this would be likely to have significant implications for all aspects of the business model. For instance, it is expected that any separation of ownership of a cluster T&SCo would be likely to impact on the allocation of cross chain risk, and that this would have implications for the GSP (see section 7 (GSP)) and RSA (See section 6 (Revenue Model)). Therefore, while accounting separation also facilitates separation, for such a request to be considered, T&SCo would need to propose to the Regulator and government alternative arrangements that demonstrate provision of a net benefit to consumers or taxpayers compared to the position where T&SCo owns both the onshore and offshore networks and systems.

T&SCo will be established as a separate legal entity. Legal (and financial) separation between T&SCo, its investors and the users of the network provides an important means of mitigating against the potential for conflicts of interest.

### **Accommodating dispersed sites and non-pipeline transportation (NPT) of CO<sub>2</sub>**

We consider that the capacity for T&S networks to be able to accept CO<sub>2</sub> from dispersed sites and international sources, either transported by ship, road or rail (NPT), will be vital for our long-term objectives of achieving our Carbon Budgets and Net Zero.

We are continuing to develop the licence conditions and business model arrangements so that non-piped sources of CO<sub>2</sub> can be accommodated by the TRI model.

In our consultation on the duties of the Regulator, we sought stakeholder views on whether aspects of NPT should be subject to economic regulation. Many respondents acknowledged that the extent to which economic regulation of NPT services is required will be a function of the level of competition for the provision of the different services. Further, it was noted that the role of economic regulation may vary across different parts of the infrastructure (e.g., transport mode, receiving terminals etc).

We have been engaging with industry to better understand proposed arrangements for NPT services in the UK. This work is necessary to better understand the likely levels of competition in the provision of NPT and the corresponding implications for economic licencing and which aspects of the infrastructure should potentially sit within the regulated asset base of the network operator.

We will continue to engage with government and industry stakeholders on how to accommodate NPT within the T&S business model.

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## Network planning

It is envisaged that UK T&S capacity will initially be developed at separate clusters, with the potential for future expansion of clusters into a UK carbon network.

We continue to expect T&SCo to be responsible for developing economically efficient plans for new connections to the T&S network. However, in the early phase of the market's development and expansion, we also recognise that delivery against such plans will be highly dependent on decisions made by government on the timing and award of support to the proposed T&S network users (e.g., ICC, LCH and BECCS contracts and DPAs). Further, where there are support arrangements with T&SCo to manage financial risks, the government will need to engage on network planning decisions.

Over the longer term, we expect a decline in the dependency of network planning decisions on government decisions to award funding to proposed network users. This is because we expect CCUS to become commercially viable without subsidy as the price for CO<sub>2</sub> increases and as technology costs and risks fall across the sector.

As part of the network development, we are considering the requirements on T&SCos regarding how they assess applications for access to the network. We are exploring several options and evaluating their suitability particularly as the CCUS market matures and regulatory arrangements for network connections mature. Further work is ongoing to develop network access requirements, and to better understand the implications for developers, and the implications for existing legislation governing third party access arrangements<sup>3</sup>.

## Network Codes

As part of the development of a regulatory regime for this new industry there is a requirement to develop network codes and a code governance process. It is anticipated that BEIS and the Regulator will be responsible for the coordination of network code development by the first T&SCos.

It is BEIS's position that it may be beneficial to have a level of consistency between the technical specification and network codes of each cluster. Consistency could facilitate network growth (for instance by promoting greater choice of networks for dispersed sites to which they can send their CO<sub>2</sub>) and removing barriers to the potential integration of onshore CO<sub>2</sub> transport networks over time as well as facilitating international import and export opportunities. However, it is also recognised that having, for example, a uniform CO<sub>2</sub> specification could reduce opportunities for clusters to compete on cost.

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<sup>3</sup> Third party access requirements are set out in the Storage of Carbon Dioxide (Access to Infrastructure) Regulations 2011



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It is envisaged that many organisations with different expertise and specialisms will be involved in developing the network codes and it is recognised that industry will have a significant role in this area.

The Regulator will approve changes to any T&S network code before the changes take effect. Where relevant, the Regulator will consult other technical regulators for CCUS (e.g., OGA and OPRED) before approving changes to the T&S network code.

The process for developing and governing network codes, including the role of BEIS and the Regulator, will require further work, including due consideration of the outcomes of the government's consultations on system operation and code governance<sup>4</sup>.

## System operation

We expect that each T&SCo will have responsibility for the system operation of its own network. We expect T&SCo will develop guidelines, operating procedures, and management systems to allow it to operate the T&S network in an efficient and safe manner and in a way that meets regulatory requirements. This responsibility should also reflect the government's priorities on net zero whilst also maintaining a resilient and affordable system that supports growth and the future expansion of the sector.

A joint BEIS and Ofgem consultation on the establishment of a Future Systems Operator (FSO) was held over the summer and closed on 28 September 2021. This consultation set out proposed FSO responsibilities across the electricity and gas systems and potential future role in relation to CCUS networks particularly in relation to network expansion where there are interactions with gas/hydrogen and electricity networks. Responses from this consultation are currently being analysed and government aims to share responses on the consultation in due course. We will review the conclusions of that consultation and its implications for CCUS over the course of 2022.

We will continue to develop and refine our views on the roles of system operator and the establishment of network codes. With the completion of Phase 1 of the Cluster Sequencing process, BEIS will work with industry and other relevant organisations in working towards a new phase of delivery. To help inform this work BEIS is considering the following parameters to guide the establishment and design of a framework to establish the operation of T&S networks:

- **safe, resilient and affordable:** development and implementation of outcomes should support safe, resilient and affordable T&S networks;
- **pace:** delivery needs to be consistent with the Net Zero Strategy;

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<sup>4</sup> BEIS published a consultation on Future System Governance including Code Reform in summer 2021 (<https://www.gov.uk/government/consultations/reforming-the-energy-industry-codes>). We are currently considering the responses and will publish the government response in due course.

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- **collaboration:** recognition that in order to build a strong, sustainable and viable carbon capture sector, government, industry and other public bodies will need to work together and at pace;
  - **consumer and user focus:** all activities should be developed in a way that considers and benefits energy consumers and users and future users of T&S networks;
  - **sector growth:** all activities should be informed by the need to grow and develop the sector in the longer term and consistent with the evolution of the future system operator<sup>5</sup>;
  - **competition and innovation:** all activities should support and enable open market competition and wherever possible innovation to benefit sectoral efficiency and consumers; and
  - **transparency:** wherever possible, for activities and outputs to be open, transparent and easy to understand. This will help market participants and related parties to understand sectoral rules and their application to their activities.

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<sup>5</sup> See BEIS consultation on this (<https://www.gov.uk/government/consultations/reforming-the-energy-industry-codes>).

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## Section 3: Business Model Evolution

The UK is proud to lead the world in ending our country's contribution to climate change; not just because it is the right thing to do, but because we are determined to seize the unprecedented economic opportunity decarbonisation provides.

New CO<sub>2</sub> T&S infrastructure is needed for the use of CCUS which will require investment of around £15 billion, to capture and store around 20-30 Mt CO<sub>2</sub> per year by 2030 and meet the Carbon Budget 6 capture targets specified in the Net Zero Strategy, with a further binding target to reach net-zero carbon emissions by 2050.

To realise this ambition, the government is investing up to £1 billion to support the establishment of CCUS in four industrial clusters. The aim is to develop CCUS as an industry that will contribute to the creation of 'Super Places' in areas such as the North-East, the Humber, North-West, Scotland and Wales. It is estimated that CCUS could support up to 50,000 jobs by 2050, with many of these jobs being well-paid and highly skilled<sup>6</sup>.

When it comes to carbon capture and storage, the UK's position is highly advantageous. We have the excellent geology for carbon storage and the world-class technical skills, capabilities and supply chain<sup>7</sup> to utilise it. This said, to deliver CCUS effectively and efficiently, it is critical that the UK does not rest on this advantage, but instead, builds on it. We will achieve this by pushing forward to strategically develop the country's CO<sub>2</sub> storage potential, through the strategic development of the UK Continental Shelf (UKCS). We recognise that to develop the UKCS further, there is a need for further understanding of potential UK CCS storage.

We recognise that there may be CO<sub>2</sub> storage sites of strategic importance that require a transport solution with greater flexibility than pipeline, both now and out to 2050. As such, we will explore the potential for non-pipeline transport to connect UK emitters to key CO<sub>2</sub> stores.

We also recognise that to deliver the dynamic and resilient CO<sub>2</sub> storage market we envision for the UK, the business models used to commercialise T&S services may, overtime, need to iterate. Reasons for this could be to better respond to the evolving realities of the carbon market or to include lessons learned from countries with more mature CO<sub>2</sub> storage markets.

To deliver this ambition it is important that the design of the TRI Model is able to evolve over time as the CCUS market develops.

To support the design of the TRI model we developed a notional base case cluster in order to understand how a T&S network might be regulated over time, taking into account the initial

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<sup>6</sup> <https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-supply-chains-a-roadmap-to-maximise-the-uks-potential>

<sup>7</sup> Government published the CCUS Supply Chain Roadmap in May 2021. The Roadmap sets out how government and industry can work together to harness the power of a strong, industrialised UK supply chain, whilst ensuring that the CCUS sector as a whole remains investible, cost effective and focused on delivery.

<https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-supply-chains-a-roadmap-to-maximise-the-uks-potential>

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phase of development; from final investment decision (FID) through to construction and then steady state operations. In doing so we have assumed the following:

**Development period:** the period from the cluster sequencing process to FID, during which time it is anticipated that the prospective T&SCo will agree with BEIS all conditions precedent to the FID for the initial phase of development, such as reaching an initial settlement on costs, returns and risk allocation (including any ex-ante assessment of costs), and agreeing all contractual delivery and support documentation for FID (see below)<sup>8,9</sup>.

**FID:** upon FID T&SCo will be granted an economic licence which reflects the initial settlement between T&SCo and BEIS. T&SCo will also enter into the Government Support Package (GSP), comprising of the Supplementary Compensation Agreement (SCA) and Discontinuation Agreement (DA) granted by the BEIS Secretary of State; Revenue Support Agreement (RSA) likely granted by a RSA Counterparty (see section 6 (Revenue Model)) and any funding arrangements agreed under the CIF.

**First regulatory period:** this is the period from economic licence award (upon FID) until a specified period following completion of construction of the first phase of cluster development, to allow for commissioning and an early operational phase – during this first regulatory period the Regulator would be responsible for administering the economic licence which reflects the initial settlement agreed by T&SCo with BEIS.

**Second regulatory period:** a specified period running from expiry of the first regulatory period (for example, 5 years). The Regulator will set and then administer the price control(s) for this period, meaning that T&SCo and the Regulator will commence the price control process during the first regulatory period. As part of administering the price control(s) the Regulator will set allowed capital expenditure ("capex"), allowed operating expenditure ("opex") and the allowed rate of return, as well as performance targets and associated incentives, similar to the way in which price controls are set for regulated gas and electricity networks.

**Enduring regime:** being the second regulatory period onwards where the Regulator sets and administers price controls on an enduring basis pursuant to its statutory duties.

This work has been developed from our discussions with parties with an interest in developing CCUS assets in the UK and represents our current understanding of how possible CCUS clusters may develop and evolve over time. Timelines are illustrative only and non-binding in respect of future decisions to be made with regards to the Regulator's roles and functions and legislative provisions which will require Parliamentary approval.

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<sup>8</sup> Projects within the clusters sequenced onto Track-1 will have the first opportunity to be considered to receive any necessary support under the government's CCUS Programme. Being sequenced onto Track 1 does not mean that support will be awarded. Any decision to award support will only be made subject to government satisfaction that subsidy control requirements have been met, government is comfortable with balance sheet implications, all relevant statutory consents have been completed, and government is satisfied that the project represents VfM for users, the consumer and the taxpayer.

<sup>9</sup> In the May 2021 document we set out our view on Early Works Support which set out how BEIS would use possible interim contractual support for critical path activities in order to keep cluster programmes to schedule should a T&SCo be FID ready before the economic licence can be granted - this position remains unchanged.

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We have developed the TRI model to unlock investment in T&S networks and deliver our objectives for the CCUS programme. In order to establish a new CCUS sector we need a commercial framework that enables and supports stable investment in projects that are likely to have long operating lives. The TRI model will be underpinned by a regulatory framework to provide investors with clear sight of the long-term revenue model to ensure they can earn a reasonable regulated return on their investment. The Regulator will operate and exercise its functions within a defined regulatory framework and regulatory guidance will be provided to clarify how the Regulator intends to approach any regulatory decision-making in some areas to provide greater visibility to investors.

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## Section 4: Economic Regulatory Regime (ERR)

Under our proposals published to date, an independent economic regulator would oversee the framework of economic regulation of CO<sub>2</sub> transport and storage (T&S), consistent with the approach in other regulated utilities.

Since the May 2021 document, we have consulted on the duties and functions of the Regulator for CO<sub>2</sub> T&S<sup>10</sup>, and set out the government's position that Ofgem is the entity best suited to undertake the role of Regulator for T&S. After consideration of responses to the consultation, the government intends to appoint Ofgem as the Regulator for CO<sub>2</sub> T&S and provide for the duties and functions of the Regulator in statute, subject to the introduction and passage of the relevant legislation when Parliamentary time allows<sup>11</sup>.

Our position since the May 2021 document remains that we expect T&SCos will agree the initial settlement with BEIS for the economic licence, as part of the conditions precedent to FID for the first regulatory period (see section 3 (Business Model Evolution)). This will include reaching an initial settlement on costs, returns and risk allocation (including any ex-ante assessment of costs). Determining the ERR will require establishment of a number of key parameters for T&SCo including:

- allowed revenues;
- outputs and incentives;
- uncertainty mechanisms; and
- duration of the first regulatory period.

This section sets out our latest thinking on these issues, focusing on the first regulatory period, and setting out where and why our thinking has changed since the May 2021 document.

After describing our current position on the ERR for the first regulatory period, we outline our position on the ERR for the second and subsequent regulatory periods.

### Overview of initial settlement process

During the development period, the Track-1 T&SCos will be required to develop the proposals submitted under the cluster sequencing process into business plans that explain their proposed development, construction, financial, operational, maintenance, and risk management plans for their networks. BEIS will meet with each T&SCo to review their

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<sup>10</sup> <https://www.gov.uk/government/consultations/carbon-capture-usage-and-storage-ccus-duties-and-functions-of-an-economic-regulator-for-co2-transport-and-storage>

<sup>11</sup> A summary of responses received for our public consultation on the Regulator's duties and functions are published as part of the government's response to the consultation (see link above)

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business plans. BEIS will aim to agree with each T&SCo the key set of regulatory parameters forming part of the initial settlement set out above as a pre-condition to FID<sup>12</sup>. As a general rule, we expect T&SCos to have developed robust cost estimates for all parts of their network, but anticipate this may be difficult to do so for the construction of offshore elements such as the storage site. Where estimates are insufficiently robust, T&SCos will either be required to re-submit their plans with further supporting evidence and more robust estimates, or be subject to an ex-post assessment by the Regulator towards the end of the construction phase.

Whether the costs are assessed ex-ante or ex-post, BEIS's aim is still to determine the efficient costs that will be allowed to be collected from users (or other sources, as set out in section 6 (Revenue Model)), and the outputs that will be required to be delivered by T&SCo before the revenues are permitted to be collected. BEIS will review the evidence for the calibration of incentives (such as targets) and relevant evidence to represent users in order to agree incentive design. The return on capital (or WACC) will also be agreed with T&SCos, taking account of the initial settlement, such as the proposed network designs, incentive calibration, and agreed risk allocation.

In developing plans for their networks and including how to optimise costs (e.g. capex) with performance (e.g. availability), we encourage T&SCos to consider a broad range of impacts (e.g. user emissions), mitigations and solutions (e.g. whether redundancy, if any, is merited) before proposing their preferred option during the initial settlement process. This analysis and optimisation should consider the design of the network and the operational management of the network to clearly show how T&SCo's plans optimise investment over the life of the project, as well as its year-on-year activities.

## Overview of regulatory mechanics for the first regulatory period

Development and construction costs are logged as shadow RAV. This attracts a WACC that compounds (or 'rolls up') during the construction phase and is capitalised into the shadow RAV value once the construction outputs are delivered.

It is likely that once a network is operational, there will continue to be ongoing development and construction of the network, for example to connect new users. In this case, subject to the assessment of risk during the initial settlement, the RAV of the operational assets will attract a lower-level WACC while the construction spend will accrue as new RAV and attract a higher-level WACC.

Once the network output is delivered, the allowed spend that has accrued as 'shadow RAV' will transfer to the RAV. The Regulator will then allow T&SCo to collect the allowed revenues associated with that output and RAV from users of the network.

The initial settlement process reflected in the economic licence (including, where applicable, any ex-post assessment) will determine the levels of efficient expenditure, RAV and allowed revenues. These figures will increase for additional network expansion that is assessed at

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<sup>12</sup> Where T&SCos propose to acquire existing assets for reuse, we set out a bespoke process later in this section.

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subsequent price controls (or, by exception through uncertainty mechanisms during the first regulatory period). Each year the existing RAV is depreciated and therefore reduces over time, notwithstanding network expansion potentially adding to the RAV.

The draft heads of terms for the proposed form of economic licence are set out in [Annex A].

## RAV and allowed revenues

We previously outlined in the December 2020 and May 2021 documents that T&SCo's allowed revenues will be determined based on several building blocks:

$$\text{Allowed Revenue}_t = \text{RoC}_t + \text{Depr.}_t + \text{Opex}_t + \text{Decom.}_t + \text{Tax}_t + \text{Adj.}_t$$

Where,

$$\text{RoC}_t = \text{RAV}_t \times \text{WACC}_i$$

Each of these building blocks of allowed revenues is discussed in more detail below.

### RoC

The return on capital is the return which T&SCo will be expected to make during the first regulatory period. It is equal to the allowed weighted average cost of capital (WACC) multiplied by the year-average RAV<sup>13</sup>.

### WACC

When setting the allowed (real) WACC we will take into account the expected costs of financing T&SCo and the risks borne by T&SCo which may vary between T&SCos<sup>14</sup>. Examples of risks borne by the T&SCo include construction risk<sup>15</sup>, development risk<sup>16</sup>, First of a Kind ('FOAK') technology risk<sup>17</sup> and operational risk<sup>18</sup>. This WACC determination will also be subject to the risk allocation and mitigation measures incorporated into the ERR and wider T&SCo business model. We consider the difference in risk to be significant between construction and operations, and therefore we expect to determine a separate WACC for capex and opex to reflect the differences in risk to T&SCo. Similarly, we expect the WACC to be higher for initial clusters to reflect FOAK risk compared with later clusters where risks to a T&SCo are better understood and can be mitigated more effectively.

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<sup>13</sup> In our December 2020 document, we considered a separate WACC for the construction phase and a WACC for the regulated WACC during operations. We prefer two different WACC rates to distinguish the risks and protect users from paying a blended WACC in the event of construction delays.

<sup>14</sup> For example, whether one cluster contains more or fewer offshore pipelines will impact the level of construction risk present.

<sup>15</sup> Considering each element of the T&S network (onshore pipeline, offshore pipeline, storage assets etc.) as well as the risk of commissioning.

<sup>16</sup> Covering aspects such as obtaining necessary permits, licences and completing the Development Consent Order (DCO) process

<sup>17</sup> Capturing technological design factors specific to CCUS, including the difficulties to build and operate an efficient compressor system.

<sup>18</sup> Concerning the likelihood of system issues across the initial cluster of CCUS projects during their operational lifetime.



It is important to note that T&SCo's actual return may be higher or lower than the allowed WACC as it will depend on T&SCo's actual expenditures (and how they compare to capex and opex allowances), actual financing arrangements (and how they compare to BEIS's view of a notional cluster), and T&SCo's actual performance (and how that compares to its performance targets).

We are proposing to maintain our previous position that the initial WACC in the first regulatory period will be determined by BEIS in dialogue with the T&SCo as part of the initial settlement process prior to FID.

We are still considering further whether it may be appropriate to include a refinancing gainshare mechanism and other mechanisms to adjust the WACC should the cost of financing T&SCo change materially during the first regulatory period.

## **RAV**

The RAV is a regulatory construct that reflects T&SCo investment. It is the capital investment into the project including development spend ("devex"), construction spend and asset expansion (capex), and a 'rolled up' cost of capital (i.e. WACC during the construction period), less depreciation, that have been agreed in the initial settlement process.

We set out in the December 2020 document that the RAV would be calculated as:

$$RAV \text{ (at a specific time)} = \sum Devex + \sum Capex + \sum IDC - \sum Depreciation$$

We have not changed our view on the principles of the RAV composition. However, we consider that it is important to distinguish between capital investment that is complete (i.e. an operational new network for use by users), and ongoing capital investment that has not yet delivered an output. Once the output is delivered, the risk profile of the project materially reduces in large part because construction risk falls away and revenues flow to T&SCo. Accordingly, we intend to apply a different WACC level for capital investment compared with operational assets.

These positions are reflected in the use of a 'shadow RAV' for ongoing capital investment (i.e. capex and devex) and rolled-up construction WACC, and 'RAV' for completed investment and operational assets. As T&SCo constructs a project, the allowed spend is reflected in the accumulation of a shadow RAV, which attracts a construction-level cost of capital (a 'construction WACC') but no revenues. Once construction is complete and the assets are available for use, the shadow RAV and accumulated construction WACC converts to a RAV which is used to calculate allowed revenues.

We therefore propose a modified RAV formula to account for the transfer of shadow RAV (SRAV) (all in real terms):

$$RAV_t = RAV_{t-1} + Transferred\ SRAV_t + Devex_t + Capex_t - Depr._t - Disposals_t + Adj._t$$

Where the RAV is comprised of the previous period's RAV, the transferred shadow RAV (SRAV) is composed of capex associated with any new outputs that have been commissioned

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and rolled-up construction WACC, other additional allowed devex and capex, less regulatory depreciation, disposals, and any other adjustments such as those arising from any ex-post assessment. Following completion of construction all of these adjustments will be reconciled in a Post Construction Review ('PCR').

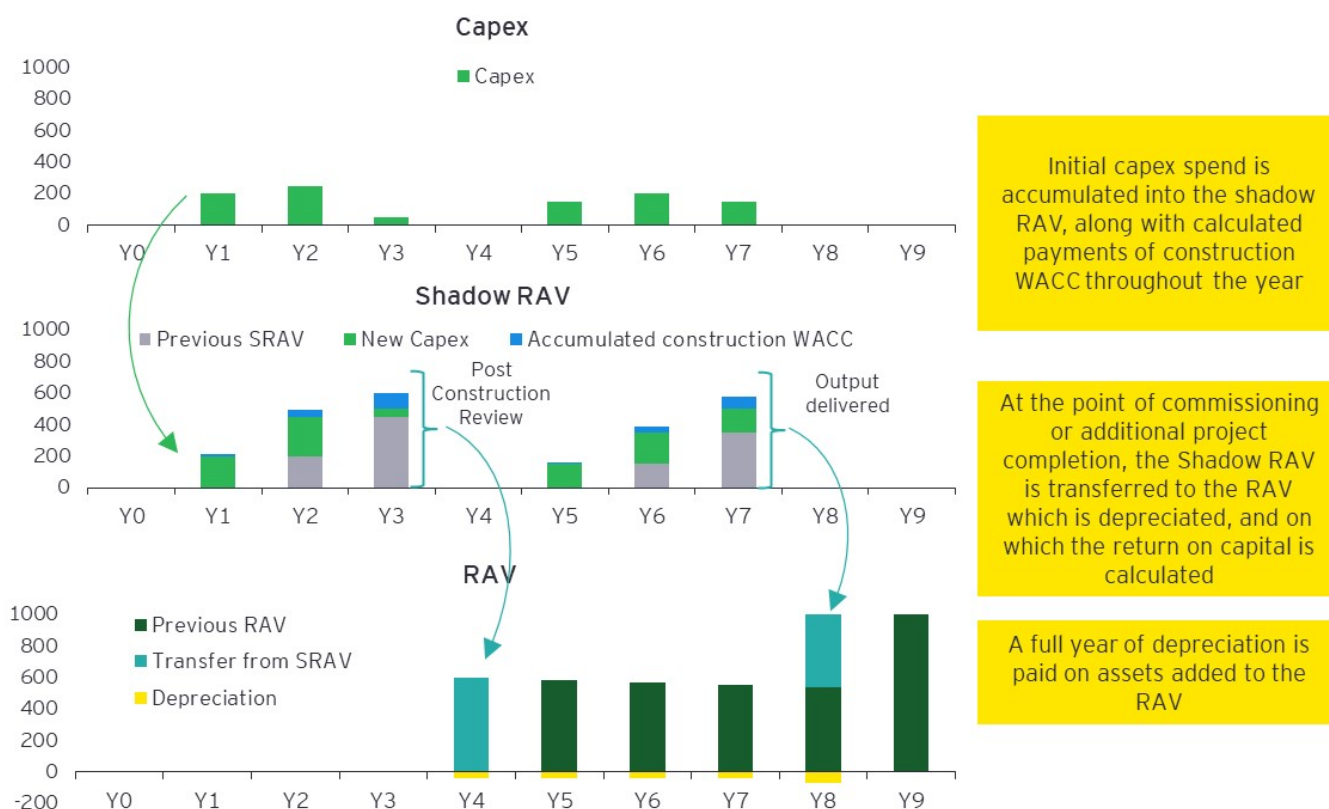
The RAV and WACC will be set in real terms, in a price base at the start of the construction period. This can then be re-indexed at future price controls if required. A revenue inflation factor will be used to convert real allowed revenues into nominal revenue payments to T&SCo.

### **Process for converting shadow RAV to the RAV**

Once an asset is constructed and available for operational use, the shadow RAV is transferred to the RAV that is used to calculate the allowed revenues in each year.

We expect BEIS and T&SCos will agree during the initial settlement process the outputs that T&SCo will deliver for both the construction and operational periods (within the first regulatory period). Construction outputs are likely to take the form of a technical asset capacity for CO<sub>2</sub> flow per unit of time. Once these are delivered and verified through a pre-agreed process (which may include other relevant technical authorities), the Regulator will convert the shadow RAV to the RAV (see Figure 1).

**Figure 1:** Illustration of process for transferring shadow RAV to the RAV during the first regulatory period



## Devex and Capex<sup>19</sup>

### Depreciation

Depreciation will also be included in both the allowed revenue and RAV formulae, with the option for different components of capex to be depreciated at different rates.

In the December 2020 and May 2021 documents, we suggested that revenue will be collected from users to cover asset depreciation over the operational period. We continue to consider the options of applying either straight-line or backloaded depreciation to the RAV as part of the allowed revenue calculations in the first regulatory period. Backloaded depreciation would mean that depreciation increases in line with expected growth in utilisation, so that allowed revenue charges on users can be reduced in early years to support the initial stages of the

<sup>19</sup> We are continuing to develop our position on the transfer of re-use assets to the RAV and will provide a further update on our proposed methodology in 2022. As set out in the 2020 Document, assets previously deployed in the oil and gas industry may be utilised/transferred as part of setting up the CCUS T&S network to save costs from building a new T&S network. As the asset is already largely constructed, the capital expenditure-based methodology for determining RAV would not be suitable to be applied directly on the transferred assets.

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project and increased in later years when the network has more users. Shaping allowed revenue to better reflect the expected number of users on the network overtime will reduce any revenue gaps in the earlier years and the need to use Risk Mitigation Mechanisms (RMMs) and Revenue Support and enables the ERR to take into account revenue being received later so T&SCo is adequately compensated. We will continue to consider the impact of the two depreciation profiles both in relation to the efficient financing of T&SCo and securing VfM for users, the consumer and the taxpayer.

## **Opex**

- Opex will be the allowed spend for efficient operational costs, which will have been agreed in the initial settlement. The opex allowance could also include an allowance for:
- expected user bad debt costs (discussed further in section 6 (Revenue Model));
- connections allowance (discussed under the Incentives subsection);
- expected hedging costs, such as for financial or energy price risks;
- expected private sector insurance premia including insurance required to access GSP arrangements (see section 7 (GSP)); and
- Supplementary Compensation Agreement (SCA) fees under GSP arrangements (see section 7 (GSP)).

The allowed opex may then be adjusted under the terms of the economic licence for allowed pass-through costs (such as business rates and licence fees) and reopeners.

Through dialogue with each T&SCo, BEIS will consider the operational risks of each project. In general, we will expect T&SCo to bear the risks that opex turns out higher or lower than the allowance.

## **Decommissioning**

Allowed revenue will include an allowance to cover the decommissioning cost of the T&S network at the end of asset life. We discuss our approach to decommissioning in section 9 (Decommissioning).

## **Disposals**

Asset disposals (including land), scrapping, and amounts recovered from third parties for costs associated with damage to their network should be included within the RAV calculation (through capex and opex being net of disposals). The value of disposals in these calculations should be on actual sale proceeds. We will require these transactions to be on an arm's length basis on normal commercial terms.

## **Tax**

Allowed revenue will include an allowance for expected tax costs taking account of, for example, existing and announced corporation tax rates. A separate adjustment term for tax will be used to review expected tax costs based on changes in tax rates.

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## Adjustments (Adj.)

Allowed revenue and RAV will be subject to some adjustments each year and captured by the adjustment term in the allowed revenue and RAV formulae. These adjustments include:

- RMMs for difference between actual revenue and allowed revenue (e.g., because demand turns out differently from expected or bad debt is higher);
- reopeners, for example for change in scope and change in law– see the Uncertainty Mechanisms subsection;
- incentives – see the Outputs and Incentives section; and
- true-ups, corrections and reconciliations, such as corrections of allowed revenue using actual data where forecasts were previously used and Revenue Support payments reconciliation and corrections for changes in expected tax costs due to changes in tax rates etc.

## Leakage fund

In the December 2020 document we said that it may be appropriate to accrue a financial reserve from allowed revenues during the operational phase which T&SCo could draw on to fund part of the costs for remedial activities associated with leaks from the storage site if the cost was above a certain threshold.

Our current position is that the T&SCo should be carrying out routine inspections and maintenance in accordance with its existing legal obligations, which should minimise leakage risk but that any residual leakage risk from the storage site should be insurable in the commercial market or managed via the SCA where commercial insurance is unavailable. As such, we do not propose T&SCos accrue a leakage fund.

## Treatment of non-regulated revenues

Examples of non-regulated revenues could include, for example, revenues associated with the import of CO<sub>2</sub> from markets outside of the licence area for subsequent storage.

In the May 2021 document, we set out that two options that could be considered, and draw on precedent in other regulated industries, are a 'single till' approach, which would see the revenues from non-regulated activities used to cross-subsidise regulated activities and bringing down the cost of user charges, or a 'dual till' approach that would see the revenues and costs of non-regulated services treated separately with any profit retained by T&SCo.

We continue to consider that that a hybrid approach would be appropriate, sharing the benefits of non-regulated activities between T&SCo and users. However, we need to better understand what additional services T&SCos intend to provide and how they expect to offer those services in order to consider how to progress work on the details of how this hybrid approach should operate e.g., whether it is based on non-regulated revenues or profits from non-regulated activities, as well as the proportion of profits or revenues retained by T&SCo.

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## Outputs and incentives

### Availability incentive

In our December 2020 and May 2021 documents, we considered that it may be appropriate for T&SCo to be subject to an availability incentive that rewards higher levels of T&S network availability during operations but penalises worse performance relative to a pre-set target. In turn, these penalties could be applied in-year, across multiple-years and/or be subject to a penalty floor. If the T&S network was unavailable, the DPA and ICC business model updates set out more information on the arrangements in place for users with a DPA or ICC contract<sup>20</sup>.

We have explored this incentive further and recognise that the design of the incentive and any network availability target will need to account for the impact of planned outages that are required for ongoing maintenance, as well as unplanned outages that are outside of T&SCo's control. These are both features of other regulated networks that have incentives on availability and, as such, we believe that a well-designed scheme will address these challenges. We will also consider whether a small opex allowance is appropriate to manage unplanned outages. T&SCo would still be expected to bear risk for unplanned outages that are attributable to factors that lie within its control.

We have further developed the design of the incentive and its application. We propose to structure the incentive using a maximum target availability (which is likely to be lower than 100% due to planned outages for maintenance). Allowed revenues would be increased by an amount – to be determined during the initial settlement process – for each unit of availability above the target level, potentially up to full availability. However, allowed revenues would be also reduced by an amount for each unit of availability below the target level, down to a threshold. Where availability falls below this threshold, we propose to spread the resulting penalties across multiple years of the regulatory period so as to continue to incentivise maximum availability while not undermining T&SCo financeability. We expect to use a second threshold for greater falls in availability, leading to dialogue with the Regulator about why availability is so low and potentially resulting in financial penalties or other enforcement action.

A well-defined availability incentive should maximise the injection and storage of CO<sub>2</sub> from users, and therefore reflect the technical capacity of the network and the demand from users. For example, some users may require high availability during certain peak seasons, while others require constant availability. As such, we anticipate using capacity and seasonality weighting factors to increase the financial reward and penalties on T&SCo for ensuring availability or failing to provide the agreed availability. We will look to do this during the initial settlement process. At the current stage, in the absence of T&SCo and user proposals for the profile of CO<sub>2</sub> injection, we propose a simplified network-wide availability incentive without any weighting factors applied. When data becomes available, we will work with T&SCos to employ a more sophisticated incentive, as well as the availability target and incentive rates.

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<sup>20</sup> See Dispatchable power agreement (DPA) business model: October 2021 update and Industrial Carbon Capture (ICC) business model: October 2021 update at: <https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models>

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## Containment incentive<sup>21</sup>

In the December 2020 and May 2021 documents we indicated that we intended to incentivise T&SCo to minimise the leakage of CO<sub>2</sub> from its network at or below a target level (that target could be zero).

The Oil and Gas Authority (OGA) is the regulator responsible for the storage of CO<sub>2</sub> on the UK Continent Shelf. The OGA will only issue a permit if it is satisfied that the storage complex has been sufficiently characterised and assessed and there is no significant risk of leakage (amongst other things).

The storage permit, regulated by the OGA, requires ongoing monitoring of the storage site to detect any leaks or irregularities, reporting on them, and undertake appropriate corrective measures. We therefore do not consider any further incentive is required in relation to minimising leakage from storage sites, given this regulatory regime.

For the pipeline transportation we consider T&SCos will be able to control leakage through operational management (including the need for venting) and technical design of the network. Our expectation is that design and operational management of the network should minimise CO<sub>2</sub> leakage. However, in considering the need for, and design of, an incentive to contain CO<sub>2</sub> within the transport network, we welcome views and evidence from cluster developers on their means (design, operational or other e.g., commercial) to minimise the risk of any leakage of CO<sub>2</sub> from the transport network.

We will also maintain consideration of other drivers and incentives such as the application of relevant Technical Screening Criteria (TSC) for the transport of CO<sub>2</sub> in the UK Taxonomy. These are currently being reviewed and government expects to consult on UK draft TSCs in the first quarter of 2022, ahead of legislating by the end of 2022. These TSCs will focus on economic activities which can make the most significant contributions to tackling climate change<sup>22</sup>.

## Connections incentive

We expect that T&SCo would be responsible for any expansion of the T&S network and be required to connect new users. Efficient asset expansion would be funded by the users as part of regulatory allowances (and spread across all users), determined through the initial settlement process or, in exceptional circumstances, through uncertainty mechanisms set out below. We still consider that a separate connections incentive is not required to encourage efficient and timely connections as this will already be incentivised through the other proposed regulatory mechanisms (i.e., ex-ante allowance to drive efficient delivery, and allowed revenues conditional on the connections being constructed). In addition, we expect bilateral connection agreements between T&SCo and users to contain performance commitments to uphold each party's obligations. A general obligation to provide connections (subject to appropriate parameters) may also be included in the relevant legislation and/or economic

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<sup>21</sup>Previously referred to as 'leakage incentive'.

<sup>22</sup> <https://www.gov.uk/government/publications/greening-finance-a-roadmap-to-sustainable-investing>

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licence conditions, in line with the approach taken in the context and gas and electricity networks. The T&S network code may also stipulate minimum standards for connections and provide regulatory recourse should bilateral negotiations between users and T&SCo fail. We will also work with T&SCo to determine the appropriate use-it-or-lose allowance to support outreach activities for the purpose of finding additional users.

## Construction delay

Previously we set out how a delay in starting the operations of T&SCo could delay users from beginning to inject captured CO<sub>2</sub> into the T&S network<sup>23</sup>. As such, we previously considered a penalty which would reduce the starting RAV if construction of the T&S network was delayed.

We now consider that withholding allowed revenues until operations commence to be a sufficiently strong incentive on T&SCo to manage its construction programme in a timely way. Construction delay will also stop the further accrual of construction WACC on allowed spend (i.e. the WACC does not further compound during the delay period). We are not currently considering further penalties such as a reduced RAV. Unless reopeners are triggered (see below), we expect T&SCo to manage the construction costs and timings itself against the allowed revenues determined in the initial settlement process. Our expectation is that construction delays would be managed in a similar way in the second and subsequent regulatory periods, although we note that the Regulator may explore the use of other measures to incentivise timely construction. The arrangements managing the risks to the first user that the T&S network is not available by the end of that user's target commissioning window (as set out in their carbon capture contracts) is addressed under the relevant user business models (e.g. DPA and ICC Contracts).

## Uncertainty mechanisms

Reopeners are a form of uncertainty mechanism that the Regulator could use to adjust the RAV, allowed revenue, and timings of outputs during the regulatory period in response to material changes in circumstance outside of T&SCo's control that could not reasonably have been predicted and prepared for at the time of the initial settlement. These are important mechanisms to provide flexibility to the initial settlement. However, we consider that these mechanisms will only be triggered in exceptional circumstances, with the aim to balance risk between T&SCo and users. Since the May 2021 document we have further considered our initial proposals to use of reopeners in the discrete case of sharing the benefits of T&SCo refinancing with users and managing opex, and we now consider there may be merit in using reopeners to address specific uncertainties under the ERR.

To ensure the T&SCo retains the delivery risk of its projects, we have proposed reopeners that should only vary the initial settlement for one-off events that lead to material changes in expenditure or output timings. The events which would trigger a re-opener are intended to be

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<sup>23</sup> A delay in starting operations of the T&S network could impact an anchor user's TCW. Under the Dispatchable Power Agreement (DPA) model, it is being proposed that the contract term will commence on the earlier to occur of the "Start Date" (i.e. when the project is commissioned) and the last day of a specified "Target Commissioning Window" of 12 months which will be adjusted day-for-day for any delays that occur due to "Force Majeure". A similar concept is under consideration for Industrial Carbon Capture Contracts.



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ones which could not reasonably have been predicted at the time of the initial settlement, and the event is outside of the control of T&SCo. In any case, T&SCo will be expected to efficiently mitigate the impacts of the event.

These reopeners could potentially be triggered by T&SCo or the Regulator. While these are likely to be more reactive, due to the nature of events, reopeners may also be used proactively. For example, in a case where the need to invest will only become clear during the first regulatory period. In this case, it may be prudent to avoid the risk of a stranded investment and wait until the case for investment is more certain. We have relaxed the need to define application windows because of the inherent unpredictability of these type of events and their potential impact on T&SCo's ability to continue operations. As such, reopeners can be triggered at any point during the first regulatory period.

Our proposed set of reopeners, and additional conditions, will include change in law and change in scope. These will be the subject of further discussion with T&SCos during the initial settlement process.

How, or whether, the reopener will adjust the RAV, allowed revenues or outputs will be determined on a case-by-case basis by the Regulator.

The application of reopeners will follow a defined process set out in the economic licence. We have considered two distinct routes for a reopener application:

- Default ex-ante route: while the events triggering a reopener could not have been predicted during the initial settlement, we expect T&SCo will typically have sufficient warning to develop a business case submission to the Regulator for assessment. The Regulator will determine if the case is eligible and reasonable, and whether revisions should be made to allowed expenditures, timelines and outputs. A successful application to the Regulator under this model should be determined through a consultative process (allowing users to provide their views), and within one calendar year. This should generally allow variations to funding within 1-2 years, depending on the timing of the application.
- Accelerated model: where an event has occurred without warning and T&SCo requires urgent regulatory intervention, a real-time model may be used where the Regulator makes a rapid determination up to a certain envelope, and potentially with an ex-post review to allow further adjustments (such as for true-ups). We consider this envelope is required to ensure T&SCo retains the risk for managing the event efficiently as well as provide users with some protection from large variations that had not been consulted on. We will determine the envelope during the initial settlement process.

The expectation is that reopeners will not be used frequently, but will provide a contingency for unforeseeable events that are outside of T&SCo's control and a mechanism to manage those events.

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## Role of the Regulator

The determinations by BEIS of allowed revenue and other key features of the ERR described above for the first regulatory period would be incorporated into the economic licence awarded to each T&SCo. These determinations would be fixed for the whole of the first regulatory period except for limited, pre-determined circumstances (e.g., where there is a significant change in events that would warrant an adjustment to the allowed costs and revenues of T&SCo). These pre-determined circumstances, where aspects of the first regulatory period could be re-opened or adjusted, would be set out in the economic licence as well. These would include any agreed uncertainty mechanisms.

In the situations where some aspect of the first regulatory period needs to be re-determined or adjusted, the Regulator will be responsible for making this re-determination or adjustment. The Regulator would need to consult with T&SCo and other stakeholders before making a decision and it would need to make decisions consistent with its legal obligations and duties. We consulted over the summer on proposed duties, powers, functions and objectives of the Regulator for CO<sub>2</sub> T&S networks. The government response to the consultation, including a summary of consultation responses, will be published in due course.

### Determining T&SCos capex

In the December 2020 and May 2021 documents, we outlined our position to adopt a combined ex-ante and ex-post assessment of construction and re-use costs. While it is likely that developers will have varying levels of confidence in their cost estimates across the different assets, we also consider that T&SCos should be responsible for developing high quality plans with well-evidenced and justified costs for their projects.

As part of determining the ERR applied to the first regulatory period, BEIS would perform an ex-ante assessment of T&SCo's proposed costs for the transport and storage assets and set a base case cost allowance. T&SCo would bear the risk of construction costs turning out to be higher or lower than the base case, except in limited pre-defined circumstances where adjustments could be made to the allowed construction costs (e.g. change in law). We also maintain our position of adopting a combined ex-ante and ex-post assessment of re-use costs. Assets previously deployed in the oil and gas industry may be utilised/transferred as part of setting up the CCUS T&S network to save costs when building a new T&S network. As the asset is already largely constructed, the capital expenditure-based methodology for determining RAV would not be suitable to be applied directly to the re-use assets.

Where costs are insufficiently certain or well-evidenced, BEIS may determine that T&SCo must resubmit its business plan addressing the shortfalls, or that the costs are more suitably assessed ex-post. This may be the case for certain elements of the offshore network. An ex-post approach will not be used to re-assess expenditure decisions made by T&SCo that were considered efficient at the time, and we would expect there to be a dialogue throughout the construction period to allow developers to test their spending plans with the Regulator in order to reduce the risk of expenditures being assessed to be inefficient on an ex-post basis.

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## Length of the first regulatory period

In the May 2021 document, we set out our view that BEIS would determine the length of the first regulatory period in consultation with the T&S network developer for each cluster. We set out that the starting point for these discussions would be that the first regulatory period would commence at the award of the licence and end after the first 3 years of commercial operations. As the aim is to have allowed enough time for operational understanding to increase ahead of the next price control period we may consider slightly longer periods of commercial operation.

In addition, we also set out that it may be appropriate to allow the first regulatory period to be extended in circumstances where the construction of the T&S network takes place over multiple phases. For this to be agreed, BEIS and T&SCos would both need to be confident that the rate of return offered was commensurate with the risks borne by T&SCo. Further, the T&SCo would need to provide sufficient confidence to BEIS about their cost projections, and the risks they will bear. In such cases, if agreed pre-conditions were met, the first regulatory period would be extended to cover the further construction subject to the specified allowed costs and WACC. If not, then the first regulatory period would not be extended and the Regulator would design and calibrate the ERR applied to T&SCo for the second regulatory period.

We will continue to develop the potential design of these arrangements in dialogue with T&S network developers.

## Second and Subsequent Regulatory Periods

As previously set out in the May 2021 document, BEIS will determine the ERR for the first regulatory period. Following the initial settlement, the Regulator will play an important role in implementing the settlement according to the economic licence conditions agreed between BEIS and T&SCos. The Regulator will implement the economic licence mechanisms, working through an annual process of translating the settlement into charges during the operational period. Where uncertainty mechanisms are in place, the Regulator will review these and make any required adjustments (e.g. to allowed revenues).

The Regulator will assume responsibility for determining the settlements for the second, and subsequent, regulatory periods in line with its statutory duties and obligations. During these periods the Regulator would be responsible for designing and calibrating the ERR applied to T&SCo. This means that the Regulator would determine T&SCo's allowed revenues based on an assessment of capex, opex, allowed WACC and other building blocks of allowed revenues such as decommissioning costs and taxes. The Regulator would also determine the appropriate performance targets and associated financial rewards and penalties (incentives) for T&SCo, as well as any uncertainty mechanisms to include to address risks faced by T&SCo and other stakeholders.

The Regulator would also be responsible for determining the appropriate duration of the second and subsequent regulatory periods. Noting that the first regulatory period would finish at different points in time for each cluster's T&SCo (because construction would finish at different points in time for each of the clusters), the Regulator may seek to set the length of

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future regulatory periods in a way that enables later regulatory periods to be concurrent for all of the T&SCos.

The Regulator would make these determinations subject to its statutory duties and obligations as determined by Parliament and the relevant legislation. We recently consulted on the duties and functions of the Regulator, to inform continued policy development and legislative proposals. We are carefully considering the range of views put forward through this consultation process. These included arguments for a more balanced approach to duties, as compared to a single principal duty for the Regulator, to reflect, in particular, the nascency of the T&S sector. Further consideration of the Regulator's duties is set out in the government response to the consultation, will be published in due course.

As a safeguard for T&SCo's investors, the decisions made by the Regulator are expected to be appealable to the Competition and Markets Authority or subject to Judicial Review, depending on the nature of the decision being challenged. Our current view is that the CMA's role in regulatory appeals in the T&S sector, and the types of decisions which are appealable to the CMA, should be consistent with the CMA's role in appeals in other regulated sectors including gas and electricity.

The Regulator would also be involved in undertaking enforcement action and, as a final step, deciding whether to revoke the economic licence. We consider that licence revocation would only occur in extreme circumstances in accordance with the revocation terms which would be set out in the economic licence prior to its award to T&SCo

We recognise that it is important to find the right balance between an independent economic regulator that is able to adapt the ERR to changing circumstances and one that can provide certainty and confidence to investors in T&SCo.

## Section 5: T&S tariff arrangements

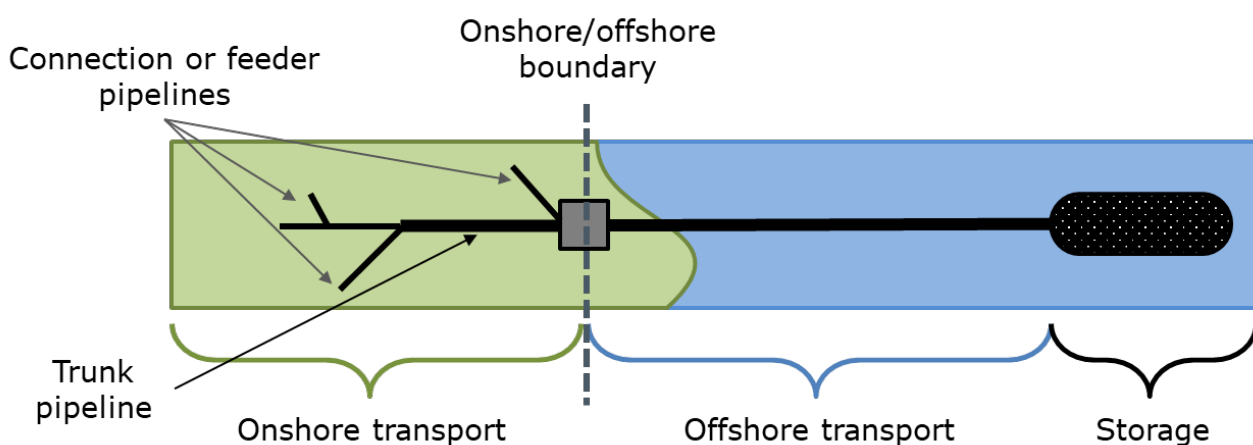
In the May 2021 document, we confirmed a User Pays revenue model for T&SCo. Under this model, T&SCo will collect its allowed revenue set under the ERR through T&S fees paid by users of the T&S network. We expect the T&S fees will be determined using a methodology initially developed by the government and industry, informed by a set of guiding principles.

If the charging methodology needs to be adjusted after it has been implemented, the Regulator will be responsible for making this adjustment. The Regulator would need to consult with T&SCo and other stakeholders before making a decision and it would need to make decisions consistent with its statutory duties.

Charging principles for the initial CCUS clusters will need to balance providing signals to users about the cost that their use of the network imposes and the need to encourage efficient use of the system against the need for sufficient simplicity to ensure that charges can be easily implemented and encourage users to join the network. Other principles that will be considered in the design of T&S fees include non-discrimination and transparency of methodology.

The T&S network will be made up of the main onshore pipeline, an offshore pipeline and a storage site. Some users will be directly connected to the trunk via a connection or feeder pipelines<sup>24</sup> and their CO<sub>2</sub> will be transported via the trunk of the onshore pipeline to the offshore pipeline. Other users will transport their CO<sub>2</sub> via NPT to either the onshore or offshore pipelines. These different types of pipelines could attract different types of charges. We have not yet taken a decision on appropriate charging arrangements for NPT of CO<sub>2</sub>, however, as set out below, the proposed tariff structure provides a basis for accommodating CO<sub>2</sub> from non-piped sources.

**Figure 2:** illustration of a notional CCUS cluster



<sup>24</sup> Connection or feeder pipelines could be sole use or multiuse.

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This section below presents our latest thinking on:

- T&S connection charges for connector or feeder pipelines;
- Use of system charges for the T&S network (the trunk of the onshore pipeline and the offshore pipeline and a storage site); and
- the T&S charging process.

## Connection charges

T&SCo will incur costs for connecting users to the trunk of the CCUS onshore pipeline, and the costs will increase with the length and size of the connection, i.e. the cost of connecting a large user located far away from the onshore pipeline will be higher than the cost of connecting a smaller user located near the onshore pipeline.

Our position on connection charges remains unchanged since the May 2021 document. In the early operational phase users will have no or limited choice over their location, therefore limiting the effective signal that a connection charge could provide. Hence the minded to position was that no connection charge should be levied on users in the early operational phase of the T&S network and instead the cost of connections would be included in the use of system charges. However, we also noted that this position does not preclude the introduction of connection charges for users that connect to the onshore pipeline in later years.

## Use of system charges for the T&S network

T&SCo will incur costs driven by the length and the capacity of the onshore and offshore pipelines<sup>25</sup>, the volume and distance of the CO<sub>2</sub> transported, and the volume of CO<sub>2</sub> stored<sup>26</sup>. Use of system charges will be levied on users to reflect the costs their use of the network imposes on T&SCo where users are able to respond to price signals.

In the May 2021 document, we outlined that it is possible that not all of the CO<sub>2</sub> injected into the T&S network will necessarily be transported via the onshore pipeline; some users may bypass the onshore pipeline by using NPT to transport their CO<sub>2</sub> to the onshore/offshore pipeline boundary, even in the early operational phase.

Therefore, in order to reflect that not all users could be connected to, or use, the onshore pipeline, our May 2021 position was to create two T&S use of system charges<sup>27</sup>:

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<sup>25</sup>This will include connection pipelines if no connection charges are to be levied on users.

<sup>26</sup> The costs associated with conditioning and compression of a user's CO<sub>2</sub> will be paid by that user and will not be included in the use of system charge.

<sup>27</sup> The two charges could be included on a single charging statement. A user that is directly connected to the onshore pipeline would be subject to the onshore pipeline charge and the offshore pipeline + storage charge, whereas a user that transports its CO<sub>2</sub> to the onshore/offshore pipeline boundary via NPT would not have to pay the onshore pipeline use of system charge.

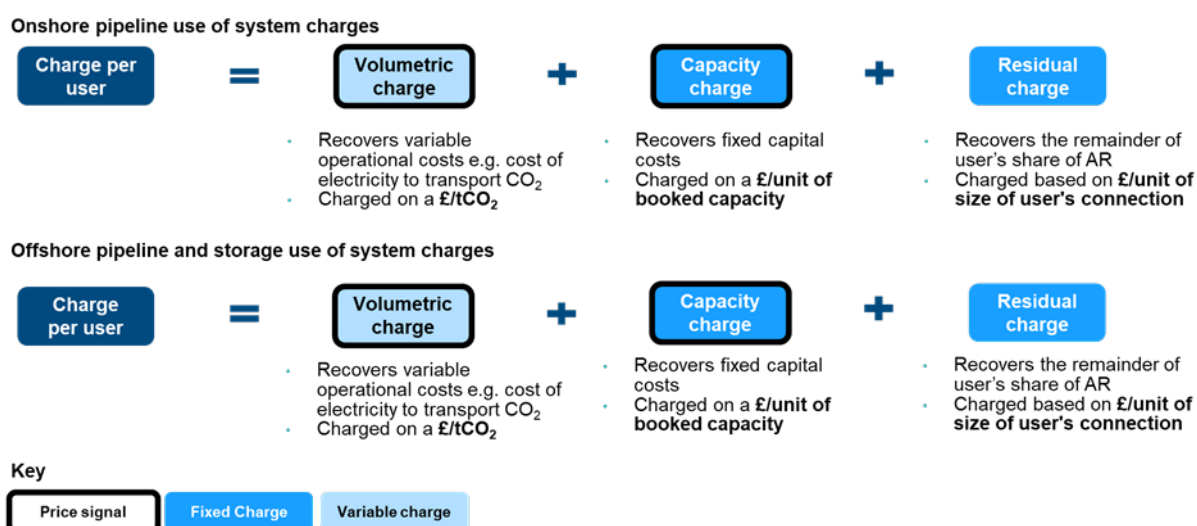
- onshore pipeline use of system charge; and
- offshore pipeline + storage use of system charge.

A user that is directly connected to the onshore pipeline would be subject to the onshore pipeline charge and the offshore pipeline + storage charge<sup>28</sup>, whereas a user that transports its CO<sub>2</sub> to the onshore/offshore pipeline boundary via NPT would not have to pay the onshore pipeline use of system charge.

## Updated position

Our minded to position remains to have two use of system charges, one for the onshore pipeline and one for the offshore pipelines and storage. Both charges will have the following high-level structure:

**Figure 3:** proposed structure of use of system charges



This tariff structure reflects that both variable and capacity costs are expected to be key cost drivers for the onshore, offshore and storage parts of the network.

The volumetric charge recovers variable operational costs e.g., cost of electricity to transport CO<sub>2</sub>, and is charged based on a £/tCO<sub>2</sub>. The capacity charge recovers fixed capital costs and is charged based on a £/unit of booked capacity<sup>29</sup>. The residual charge recovers the remainder of user's share of allowed revenue and is charged based on £/unit of size of user's connection.

The charging structure is expected to be consistent across clusters, with different charging rates allowed to reflect differences in total costs and cost structures. We will work with industry to develop the detailed methodology for use of system charges for the T&S network.

<sup>28</sup> The onshore pipeline charge and the offshore pipeline + storage charge could be included on a single charging statement.

<sup>29</sup> Booked capacity is the maximum capacity of the T&S network that a user can use over a certain time period.

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## Onshore pipeline use of system charge

It is expected that in the early operational phase users will have no or limited choice over their location, and some users may have less choice compared to others. Hence in the May 2021 document, our minded to position was that the onshore pipeline charges should not vary by the distance over which the CO<sub>2</sub> is transported in the early operational phase. The exclusion of a distance charge creates a level playing field for users regardless of how far away they were located from the onshore/offshore boundary, and promotes the pace of development of the CCUS sector and connecting the most sustainable users, without financially penalising users further away from the onshore/offshore boundary.

### Updated position

We continue to hold the view that users will have no or limited choice over their location in the early operational phase, hence our minded to position is that onshore pipeline charges should not vary by the distance over which the CO<sub>2</sub> is transported; these costs will be socialised across all users connected to the onshore pipeline through the onshore pipeline use of system charge. However, as set out in the May 2021 document this position will continue to be tested against T&S design plans.

## Offshore pipeline + storage use of system charge

In the May 2021 document, our minded to position regarding offshore pipeline + storage use of system charge was that it should not include an element to take account of use of the length of the network, as users do not have control over the length of the offshore pipeline and their use of the length of the offshore pipeline will not vary. It is expected that in the early operational phase CO<sub>2</sub> will travel the full length of the offshore pipeline to be stored.

### Updated position

Our minded to position for offshore pipeline + storage use of system charges is unchanged. Any decision on the design of use of system charges in the early operational phase does not preclude changes to the charges in later years, subject to consultation.

We acknowledge that injection of CO<sub>2</sub> at the storage site wellheads from ships may become a feature of CCUS clusters in the future. If this materialises in the future, we anticipate that the design of the system usage charges will be revisited to appropriately support this use-case.

## T&S charging process

We have considered the charging and payment mechanisms for the T&S network for the early operational phase and set out our minded to position below.

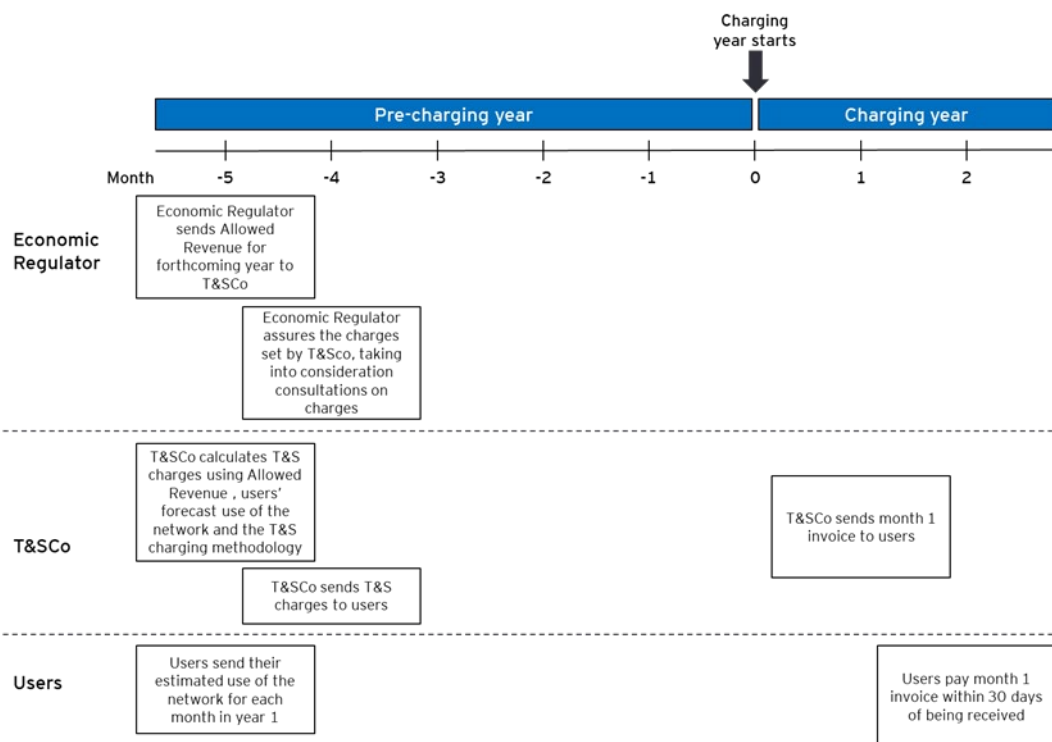
T&SCo will be responsible for setting T&S fees to collect the allowed revenue set by the Regulator in accordance with the T&S charging methodology, and these charges will be assured by the regulator. T&S fees will be set annually, four months in advance of the charging year, based on users' forecast of volumes of CO<sub>2</sub> to be injected into the network, their booked



capacity and taking into consideration consultations on charges. At the same time that T&S fees for the forthcoming charging year are published, forecast T&S fees for the following two years will be made available. Setting T&S fees annually will provide a degree of certainty and stability for users, whilst providing flexibility to update them frequently enough to reflect the user environment and costs. Forecasting charges up to two years in advance will also inform users' decisions on future usage of the network.

During the charging year<sup>30</sup>, T&S fee invoices will be sent directly to users each month, on an ex-post basis, i.e. each user will be invoiced for their utilisation of the network in the previous month. Charging invoices on an ex-post basis mitigates against the risk of users' inaccurately forecasting their use of the network, which may be higher during the early operational phase. Users will be required to pay their invoice<sup>31</sup> to T&SCo within 30 working days of receiving the invoice, which accommodates the payment of CfDs to users.

**Figure 4:** illustration of proposed T&S charging process up to payment of month 1 charge



Regarding the enforcement regime if there is a late payment, our minded to position is that users will be issued with late payment notices<sup>32</sup> and that interest will be applied to late payments to incentivise users to pay their T&S fees in a timely manner. T&SCo will also be able to draw down user collateral<sup>33</sup> to enable it to recover its allowed revenue. After each charging year, actual revenue collected through T&S fees will be reconciled against allowed

<sup>30</sup> The invoice will include all elements of T&S fee (capacity, volumetric and residual)

<sup>31</sup> All elements of the fee are to be paid on a monthly basis.

<sup>32</sup> A notice issued to the user, formally informing them that they are in default after a certain number of days past the invoice due date.

<sup>33</sup> This would involve drawing down user collateral, which is posted by all users to mitigate risk of non-payment of charges to the T&SCo.

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revenue<sup>34</sup>. The allowed revenue will be increased/decreased through the Revenue Adjustment Mechanism (RAM) in order to return any over recovery/collect any under recovery of revenue two years after the charging year in question<sup>35</sup>. The increase/decrease in allowed revenue will in turn lead to an increase/decrease in the residual charge in the T&S fee.

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<sup>34</sup> Taking into account any money T&SCo has received through RMMs, such as drawing down collateral, its bad debt allowance, its financial reserve, or from government or energy consumers. See section 6 (Revenue Model) for a description of these RMMs.

<sup>35</sup> Any difference between actual revenue collected through T&S fees and allowed revenue will be reflected in the residual fee two years after the charging year in question (e.g. year 1), as the reconciliation for the year in question will take place at the start of the next charging year (i.e. year 2), at which stage the year 2 charges would have already been set – hence the under or over recovery of year 1 revenue would be reflected in year 3 charges.

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## Section 6: Revenue model

The User Pays revenue model, which was confirmed in the May 2021 document, will be a sustainable model for T&SCo in the steady state. However, in the first regulatory period<sup>36</sup> there may be structural revenue risks to T&SCo.

In the May 2021 document we presented Risk Mitigation Mechanisms (RMMs) to mitigate the risks associated with the revenue model. The risks identified were:

- utilisation build-up during the early operational phase – users will join the network in phases and the T&S network will not be fully utilised for some time resulting in T&SCo collecting less than its allowed revenue, assuming users pay T&S fees that reflect their use of the network;
- timing mismatch of when planned capture projects connect – T&SCo will only start receiving user revenue when the first user joins the T&S network and so if the first user joins later than expected T&SCo will not be able to collect any revenue;
- underutilisation of the network – once the first user has connected to the T&S network T&SCo may collect less than its allowed revenue, for example, if further users don't connect on time, there are fewer users than expected, or if there is less CO<sub>2</sub> injected into the network than expected; and
- bad debt of users – once the first user has connected to the T&S network, T&SCo will collect less than its allowed revenue if there are unforeseen delays in payment of T&S fees or non-payment by users (e.g. insolvency of a user).

We have further considered how these revenue risks will be mitigated through the RMMs, as well as the processes underpinning these, and our update is set out below. If the initial proposals to mitigate the risks are not sufficient to enable T&SCo to recover its allowed revenue, Revenue Support<sup>37</sup> will be available to protect T&SCo. Revenue Support is a mechanism which provides for recourse from consumers or taxpayers.

Any decision on the RMMs and Revenue Support to address risks related to the revenue model in the early operational phase does not preclude changes to these mitigation measures under the enduring regime.

### Utilisation build-up during the early operational phase

In the May 2021 document our minded to position was to include the following RMMs and

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<sup>36</sup> In the May 2021 update we set out that structural revenue risk may extend beyond the first regulatory period. We continue to consider if this may still be the case as it will depend on market conditions and the levels of demand and system utilisation. From the second regulatory period, the Regulator will be responsible for determining the extent of and appropriate ERR mitigations for structural revenue risks.

<sup>37</sup> Revenue Support was previously referred to as the "Contingent Mechanism". See RSA heads of terms for more detail.

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Revenue Support to address the impact of utilisation build-up in the early operational phase:

- upfront capital contribution through the CIF – the provision of upfront capital funding could reduce the capital cost incurred by T&SCo which it has to finance, and in turn this would reduce T&SCo's allowed revenue required;
- TRI model design – the allowed revenue profile could be shaped to match the expected utilisation profile of the T&S network, i.e. deferring revenue from the early operational phase to later in the operational phase. This could be achieved by adopting a non-straight-line depreciation of the RAV; and
- Revenue Support – if other proposed mechanisms fail to adequately mitigate the revenue risk to T&SCo then revenue could be recovered from taxpayers or consumers.

## Updated position

Since May 2021, we have further considered how to protect T&SCo from the impact of utilisation build-up. We are considering ways to provide capital support through the CIF that may reduce this impact. We continue to explore the TRI model design by considering the use of straight-line or backloaded depreciation of the RAV as part of the allowed revenue calculations. Similarly, we will also consider the timing and profile for the accumulation of the decommissioning fund(s).

We are also minded to include mutualisation to address the impact of utilisation build-up. Mutualisation was not proposed as a mitigation for utilisation build-up in the May 2021 document, but was included as a RMM for underutilisation. Mutualisation involves increasing T&S fees in order to enable T&SCo to collect more of its allowed revenue than it would be able to if T&S fees were only charged in proportion to users' expected utilisation of the network and booked capacity.

Since May 2021, we have developed our approach to mutualisation, considering key CCUS business model principles. These include for policies to be market based – compatible with existing market frameworks – but retaining the flexibility to respond to market conditions and public needs as markets and the economy evolve, and also to be an investable proposition for both T&SCo and users of the network, attracting new domestic and international entrants to the market with the potential to be subsidy free.

Therefore, we believe that users' exposure to increasing T&S fees should be limited to a cap, and we are considering the UK carbon price as a basis for the cap. We think that using the carbon price provides an appropriate level of protection to users as it uses a visible and established external benchmark, while still incentivising utilisation of the network.

The increase in T&S fees from mutualisation for utilisation build-up will be set in advance of the charging year. T&SCo will forecast the revenue it expects to collect if T&S fees were charged in proportion to users' expected utilisation of the network and booked capacity. If T&SCo's forecast of revenue is less than its allowed revenue, T&SCo will increase the residual fee up to the cap. T&SCo will submit its calculation to the Regulator for assurance and once assured

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(including industry consultation on proposed charges), the T&S fees will be set for the ‘charging year’.

Subject to ongoing design of the TRI model, we are also minded to include Revenue Support to protect T&SCo if the RMMs described above are not sufficient to enable recovery of allowed revenue. Under this concept, for T&SCo to receive Revenue Support, we expect T&SCo to enter into a Revenue Support Agreement (RSA) with a RSA Counterparty upon satisfying certain initial conditions precedent.

There are a number of possible scenarios where this concept could apply. For example, during the early operational phase, at the beginning of each quarter, we envisage that T&SCo will be able to request Revenue Support to cover any expected shortfall from estimated revenue from users and RMMs in the future compared to its allowed revenue, pro-rated for the quarter.

T&SCo will inform the Regulator of its request to access Revenue Support and the Regulator will then assure T&SCo’s request to access Revenue Support.

Once T&SCo’s calculations have been assured by the Regulator, T&SCo will apply to the RSA Counterparty to access Revenue Support. If Revenue Support is to be funded by taxpayers, the RSA Counterparty will inform government of its intention to collect Revenue Support, whereas if Revenue Support is to be funded by consumers then the RSA Counterparty will inform energy suppliers or relevant entities.

T&SCo will be able to make its request for Revenue Support at the beginning of each quarter so that T&SCo can receive its allowed revenue in a timely manner. However, as the request for Revenue Support will be made based on expected shortfall in allowed revenue for the quarter, there will need to be a reconciliation process to ensure T&SCo does not receive too much or too little revenue.

## Timing mismatch of when capture projects connect

In the May 2021 document our minded to position was to include the following RMMs to mitigate against this risk in the early operational phase:

- Rolled Up Interest (RUI) – the allowed return on capital and depreciation that T&SCo would have been able to collect as part of its allowed revenue if the first user had joined the T&S network on time could be deferred and “rolled up” into the RAV that T&SCo can recover across the remaining operational life of the T&S network;
- recovery of operating expenditure – T&SCo’s opex within its allowed revenue will be paid for each year, potentially by consumers or taxpayers, until a user joins the T&S network; and
- Revenue Support – if other proposed mechanisms fail to adequately mitigate the revenue risk to T&SCo then revenue could be recovered from taxpayers or consumers.

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## Updated position

Since May 2021 we have further considered how to protect T&SCo from the risk of timing mismatch.

If the first user does not become operational during its Target Commissioning Window (TCW)<sup>38</sup> T&SCo will calculate the allowed revenue it should have received from that user. The Regulator will assure these calculations and once assured, it will roll-up the return on equity and depreciation that should have been received in the relevant period into the shadow RAV, in the process referred to as RUI, which will increase allowed revenue in future years.

Since the May 2021 document, we have decided that the operating expenditure and allowed cost of debt that T&SCo should have received from the first user will be provided through Revenue Support.

## Underutilisation of the network

In the May 2021 document our minded to position was to include the following RMMs to mitigate against this risk in the early operational phase:

- mutualisation over the remaining user base – T&S fees for remaining users of the T&S network would be increased in order to close the revenue gap from underutilisation, with T&S fees capped; and
- Revenue Support – if other proposed mechanisms fail to adequately mitigate the revenue risk to T&SCo then revenue could be recovered from taxpayers or consumers.

We also set out our view that other RMMs may be implemented by the Regulator in the enduring regime, and that we were minded not to include the following incentives in the early operational phase:

- building a financial reserve – a financial reserve would be included as part of the allowed revenue and could be used to recover any allowed revenue T&SCo has not collected from users due to underutilisation; and
- T&SCo's utilisation incentive – T&SCo would be encouraged to increase use of the T&S network through rewards or penalties for higher than or lower than expected use of the T&S network, respectively.

## Updated position

Since May 2021 we have further considered how to protect T&SCo from the risk of underutilisation. In the early operational phase we are minded to include mutualisation up to a cap and Revenue Support to mitigate this risk.

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<sup>38</sup> See relevant emitter business models.

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Mutualisation up to the cap for underutilisation will be applied following the reconciliation of T&SCo's allowed revenue against its actual collected revenue<sup>39</sup>.

At the end of the charging year, T&SCo will reconcile the actual revenue collected in that year to the allowed revenue. If there is under recovery of revenue due to underutilisation T&SCo will calculate how much revenue is to be recovered from mutualisation subject to the cap and submit its calculations to the Regulator. The Regulator will assure T&SCo's<sup>40</sup> calculations and, once assured, it will increase allowed revenue through the RAM two years after the charging year in question to account for the under recovery of revenue in that year. The change in the allowed revenue in future years will take effect through an increase in the residual fee in the T&S fees.

If there is an under-collection of allowed revenues after mutualisation up to the cap, Revenue Support will be used to enable T&SCo to collect its total allowed revenues.

We remain of the view that the financial reserve and utilisation incentive are not appropriate RMMs for the first regulatory period.

## Bad debt of users

In the May 2021 document our minded to position was to include the following RMMs to mitigate against this risk in the early operational phase:

- collateral – users of the T&S network could be required to post collateral equal to a certain percentage of their expected annual T&S fees or users could buy insurance (if available) against not being able to pay T&S fees; and
- bad debt allowance – a “use it or lose it” bad debt allowance in the calculation for T&SCo's allowed revenue which is returned to users at the end of every charging year if it is not fully utilised.

### Updated position

Since May 2021 we have further considered how to protect T&SCo from the risk of bad debt.

The risk of bad debt is considered to be low in the early operational phase as it is expected that the majority of users will be in receipt of payments through CfDs which will cover the T&S fee. Despite the low risk these RMMs still offer important mitigations to revenue risk for T&SCo.

In the early operational phase we are minded to include collateral and bad debt allowance as RMMs to mitigate against this risk.

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<sup>39</sup> This differs to the timing for mutualisation for utilisation build-up, whereby T&S fees can be increased in advance of the year based on T&SCo's forecast of expected revenue from T&S fees charged in proportion to users' expected utilisation of the network and booked capacity.

<sup>40</sup> Mutualisation is a two-way mechanism. If the T&SCo collects revenues in excess of the allowed revenue amount in a storage year, users fees will be reduced in subsequent charging years.

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Users will be required to post collateral equal to their largest expected invoice for two consecutive months in the coming year (e.g. satisfactory letters of credit or parent company guarantees) once charges have been set ahead of each charging year.

The bad debt allowance will be included as part of the formula for determining allowed revenue.

During the charging year, following the end of every quarter T&SCo will reconcile the actual revenue received in the quarter to the allowed revenue it should have received<sup>41</sup>. If there is under recovery of revenue due to non-payment from one or more users it will first calculate how much revenue it can recover from collateral from the users that have not paid. If the under recovery of allowed revenue is larger than the amount that T&SCo can receive from collateral then it will calculate how much revenue it requires from the bad debt allowance.

In order for a user that has previously not paid its T&S fee to continue using the T&S network it will need to repost collateral so it meets the requirements again and pay the missed payments with interest.

Following the end of the charging year T&SCo will report to the regulator whether it used any of the bad debt allowance, and if so how much. Following an assurance exercise, the regulator will deduct any bad allowance not used from the allowed revenue for two years after the charging year in question as part of the RAM.

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<sup>41</sup> The reconciliation will take place over a month after the quarter has finished as invoices are charged at the end of the month on an ex-post basis, and users have 30 working days to pay their invoices



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# Section 7: Government Support Package

In previous updates, we published initial perspectives on a possible Government Support Package ('GSP'), but since the May 2021 document, the mechanism has been further developed to ensure adequate protection to the T&SCo from high impact, low probability risks, taking into account subsidy control rules, guidance on managing contingent liabilities in the public sector<sup>42</sup>, and the polluter pays principle.

## Scope of the GSP

The overall scope of the GSP remains broadly the same as previously set out. For the avoidance of doubt however, the GSP will not provide protection to T&S network users from exposure to the risks of Asset Stranding and Leakage of CO<sub>2</sub>, as the GSP is a suite of contractual agreements between government and T&SCo. Arrangements for T&S network users will be set out in user business models.

Updated definitions of the high impact, low probability risks identified are set out below (with more detail on the specific roles of the commercial insurance and the GSP in managing these risks set out later in this section 7):

- **Stranded Asset** – the asset would be considered stranded when the actual revenue falls consistently below the level of the allowed revenue so that the asset becomes uneconomic, and where other measures to support T&SCo through the ERR or through the RSA are either ineffective or have been discontinued.
- **Leakage of CO<sub>2</sub>**<sup>43</sup> – is defined as where leakage of CO<sub>2</sub> from the store complex or specified significant irregularities (such as an unforeseeable geological event) gives rise to a requirement of the OGA or relevant technical regulator that T&SCo take material corrective measures in respect of the store complex or that CO<sub>2</sub> injection by T&SCo be prevented or suspended for the long term or indefinitely. This will not include mitigating measures which should be addressed by normal planned preventative or reactive maintenance or constraints on the level of CO<sub>2</sub> injection or the capacity of the store complex.

Leakage of CO<sub>2</sub> is expected to be managed in the first instances by commercial insurances but the Supplementary Compensation Agreement (SCA) is to provide protection in the remote circumstances where commercial insurances are not available or are insufficient. Work is ongoing to quantify the probability of risks materialising. The OGA is the regulator responsible for the storage of CO<sub>2</sub> on the UK Continent Shelf. The OGA will only issue a permit if it is

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<sup>42</sup>[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/871660/0602\\_2020\\_Government\\_as\\_Insurer\\_of\\_Last\\_Resort\\_report\\_Final\\_clean\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/871660/0602_2020_Government_as_Insurer_of_Last_Resort_report_Final_clean_.pdf)

<sup>43</sup>Leakage of CO<sub>2</sub> is used throughout this section and should be considered to have the meaning as set out in the definition above.

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satisfied that the storage complex has been sufficiently characterised and assessed and there is no significant risk of leakage.

It was previously envisaged that GSP provisions would be a contractual arrangement between government and T&SCo and this view remains unchanged. The envisaged contractual structure is as follows:

- **The Supplementary Compensation Agreement (SCA)** is a contract which will provide certain payments to T&SCo if commercial insurance is unavailable (or not available on commercially viable terms, if for example costs are excessive) or has been exhausted, and a relevant liability of T&SCo arises. The objective of the SCA is to return the asset to a reasonable and sustainable level of operational readiness. More detail on the likely coverage of the SCA is in **Table 1** but it includes provision for business interruption (including debt service), remediation of the situation (including any damage to the environment) and the payment of carbon allowances. The SCA will be available to manage the Leakage of CO<sub>2</sub> risk, but not the Stranded Asset risk which will be addressed by the RSA.
- **The Discontinuation Agreement** allows for the Secretary of State to discontinue the GSP<sup>44</sup>, and entitles T&SCo to be compensated for its equity and debt investments in the event that either:
  - the T&S network becomes a Stranded Asset (as defined in the introductory paragraphs of this section 7); or
  - the level of calls (or forecast calls) under the SCA have reached a specified threshold and government takes the view that ongoing SCA support is not sustainable (for instance because it does not believe asset can be returned to a reasonable and sustainable level of operational readiness and injection can recommence in a timely manner, which may be decided from the outset).
- **The Liaison Agreement** provides a framework for effective governance and information flow between T&SCo and government – more detail on this is set out later in this section.

T&SCo will not have the ability to choose between the individual elements of the GSP, as they are complimentary to each other. Draft heads of terms for these contracts are provided in Annex C and Annex D respectively.

## Stranded Asset Risk

Government is putting in place a set of measures to deal with the demand risk faced by T&SCo. In the event that T&SCo is exposed to demand risk, e.g., where users are late in connecting to the network or subsequently demand falls, and there is an insufficient number of other users to make up any revenue shortfall, RMMs are included within both the economic

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<sup>44</sup>The draft heads of terms set out the consequences of discontinuation in full. An election by the SoS to Discontinue will result in the Regulator being entitled to revoke T&SCo's licence

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licence and the RSA (funded by taxpayers and/or consumers). This provides a backstop to protect T&SCo from the full impact of the demand risk, thus helping it maintain its economic viability. These arrangements are outlined in section 6 (Revenue Model). Such support is expected to be particularly important during the early operational phase of the project, when timing mismatch and utilisation build-up risks mean that a larger than anticipated revenue gap could arise.

In later periods, if underutilisation were to persist or re-emerge, there is likely to be more emphasis on mitigation measures such as the mutualisation of costs among a remaining pool of users, which would be achieved through the ERR. However, Revenue Support may still be relevant in later periods, particularly if it is anticipated that demand, having fallen, could return in the future (for instance, with new users planning to connect to the network).

While we expect demand for CCUS to grow, there may be remote circumstances when the prospects of demand for T&SCo are very weak, and government determines that Revenue Support payments are no longer viable to support Stranded Asset risk such that the government support arrangements should be terminated. In these circumstances, government has the option to trigger the Discontinuation Agreement entitling T&SCo to compensation to compensate debt and equity investors.

With regards to the trigger for Discontinuation for Stranded Asset risk, the current thinking is that once compensation under the RSA reaches limits of affordability or practicality, government has the right to trigger the Discontinuation Agreement. On this basis, T&SCo would either be in receipt of Revenue Support or instead receive compensation under the Discontinuation Agreement.

## Leakage of CO<sub>2</sub> from storage facilities

For the purposes of GSP and administration of the SCA, the risk of Leakage of CO<sub>2</sub> shall be as defined in the introductory paragraphs of this section 7.

Any requirement or direction by the OGA or relevant technical regulator that T&SCo take material corrective measures in respect of the store complex would be preceded by consulting with the T&SCo as operator of the storage permit to assist in determining what action was necessary. Where there is a Leakage of CO<sub>2</sub>, in addition to any corrective measures, the OGA or relevant technical regulator would have the power to modify or, as a last resort, revoke the storage permit after having consulted with the T&SCo as operator of the storage permit.

The SCA could also be triggered prior to injection commencing if the OGA or relevant technical regulator directed that injection could not start because of a specified significant irregularity (such as an unforeseeable geological occurrence) and could be extended to cover the post-injection period where CO<sub>2</sub> is leaking from the store complex, where the OGA or relevant technical regulator determines that post-closure remedial action is necessary.

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It is important to note that, while a Leakage of CO<sub>2</sub> is more likely to be linked to a time specific event such as mechanical equipment failure or some other factor associated with the store complex, it is possible that Leakage of CO<sub>2</sub> may emerge over a longer period of time.

Leakage of CO<sub>2</sub> could result in a loss of revenue if users can no longer send CO<sub>2</sub> to the store complex and the T&SCo would be required to cover additional costs e.g., additional opex and cost of purchasing any carbon allowances. In the first instance, we would expect these events to be insured by T&SCo such that a) the financial position of T&SCo is supported in the near term, with cover for business interruption (including debt service) and payment of carbon allowances; and b) cost to remedy the situation (including any damage to environment) and return assets to a reasonable and sustainable level of operational readiness are able to be paid. We would expect that the compensation available under the SCA to be based on the terms and heads of cover of the required insurance cover for T&SCo. These are set out in **Table 1** in the '*GSP and insurance*' section.

Where commercial insurance does not provide sufficient cover, funding through the SCA will provide protection where the limits of indemnity under commercial insurances are exceeded, or where sufficient cover is unavailable. Where work to return assets to a reasonable and sustainable level of operational readiness would include further capex that would accrue to the RAV (for instance the drilling of a new well) the decision to approve this cost would be for the Regulator, and this cost would be expected to be financed as an accrual to the RAV. The SCA will therefore interact with both commercial insurance and the ERR where further capex is required to remedy a situation. It is not anticipated that there will be interaction with the RSA in the event of Leakage of CO<sub>2</sub>, i.e., Revenue Support for opex and for debt service will be via business interruption insurance and the SCA rather than the RSA.

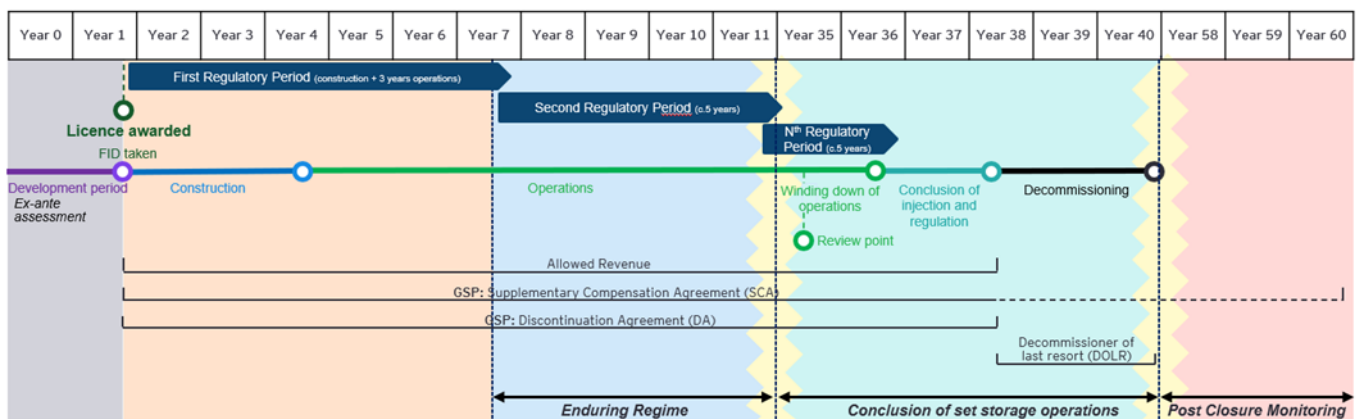
Whilst recognising that the regulators will be taking their decisions independently, in acute circumstances there will likely be a need for additional coordination, between the technical and economic regulators and between government and the regulators. In such a circumstance the OGA or relevant technical regulator may decide to permanently suspend injection or, the Regulator may conclude (having taken the necessary and appropriate advice) that there is no prospect of further investment efficiently and/ or cost effectively remediating the issue. These decisions would have implications for government and the management of the GSP. In such circumstances government will take appropriate action and reserves the right to trigger the Discontinuation Agreement and compensate debt and equity investors, rather than continuing to support remediation where the asset is identified as irreparable.

## Timing and duration of the GSP

GSP support (both the SCA and Discontinuation Agreement) would commence when the economic licence is granted by the Regulator. The Discontinuation Agreement support for a Stranded Asset would cease at the end of injection because there would be no further revenue expected. The Discontinuation Agreement support for Leakage of CO<sub>2</sub> would also cease because its purpose (compensating investors for the RAV investment that they have made) will no longer be applicable as the RAV will have depreciated to nil value.

In respect of the SCA, a review point (which will take place during the tail end of the operational life of the asset) will be required for market sounding of the commercial insurance sector to assess whether the potential liabilities can be covered for the full extent of the decommissioning and post closure period. This review point would need to be scheduled during operations to allow for appropriate costs to be passed through the ERR regime if necessary. Where insurance cannot be obtained, or is not sufficient, government would extend the SCA through this period to ensure that remediation and liabilities resulting from Leakage of CO<sub>2</sub> can be covered.

**Figure 5:** outline timing and duration of GSP



## Decommissioning

The UK is party to a number of international agreements that govern activity in the marine environment and, under these, has obligations in relation to the decommissioning of offshore installations and structures. As a result, in the event that decommissioning is not carried out by industry, any outstanding decommissioning obligations may ultimately fall to Government, with the associated costs to be borne by the taxpayer.

The Regulator will ensure provision for decommissioning is included as part of the allowed revenue calculation, enabling the decommissioning fund(s) to be accrued in full over the operational life of the asset. The Regulator will be responsible for reviewing any adjustments to the decommissioning fund(s) and reflecting these in the Allowed Revenue calculations throughout the operational period of the asset and as the end-of-life period approaches. This should ensure that the final fund(s) match the total expected decommissioning cost. These adjustments will be based on periodically updated estimates of the decommissioning liabilities provided by the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED), in consultation with the OGA, and determined using information provided by T&SCo.

The Petroleum Act 1998 (1998 Act) is the principal legislation governing decommissioning in the UK Continental Shelf (UKCS) and provides a framework for the orderly decommissioning of disused offshore installations and offshore pipelines on the UKCS. Decommissioning of offshore oil and gas and CCUS installations and pipelines is regulated by OPRED. One of OPRED's key responsibilities is to protect the taxpayer from decommissioning liabilities. To

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enable this, it has a regime in place to assess the risk of this cost falling to the taxpayer and can take mitigating actions using powers set out in the 1998 Act and is therefore well placed to manage a range of situations. This includes where there is a shortfall in the decommissioning fund(s) in the event of the Discontinuation Agreement being triggered.

More details on the approach to decommissioning can be found in section 9 (Decommissioning).

## Interface of mechanisms with GSP

As set out above, there will be interactions between the SCA and the Discontinuation Agreement with the ERR and the RSA. There will be a number of interactions between these mechanisms during the life of T&SCo, including the interfaces set out below:

- In the event of a revenue shortfall, the Regulator will need to act in accordance with its duties/power in determining whether to allow other RMMs. This could include mutualisation of the revenue gap (up to a cap to ensure users were not priced out of capture). Once the RSA is triggered, the Discontinuation Agreement protects T&SCo if the government decides to cease payments under the RSA.
- In the event of the SCA being triggered, decisions about further capex that would be additional to the RAV (as opposed to repair or remediation) would be a regulatory decision and not part of the SCA considerations. Any expenditure added to the RAV would be reflected in the compensation available in the event of the Discontinuation Agreement being triggered.

We have started to develop a process diagram to set out the user journey. This is included in **Appendix 1** to facilitate discussion.

## Governance arrangements

In this update we are introducing the concept of a Liaison Agreement. This arrangement would be entered into to provide a framework for governing the relationship between government and T&SCo. There is a need for robust and effective GSP contract management procedures to ensure information is available and able to be considered in an effective way.

The Liaison Agreement will ensure that regular bi-lateral conversations between T&SCo and government are taking place and help to structure efficient information flows and reporting requirements between parties. Information flows and reporting requirements will likely need to change over time, so the approach will need to be responsive and flexible, with appropriate escalation routes.

The key elements of the Liaison Agreement, include:

- setting out the relationship between government and T&SCo, including in relation to proposed changes to the project documents or variations to the T&S network; and

- 
- detailing the information and reporting requirements of T&SCo.

Obligations on T&SCo need to be part of the overall contractual structure. The draft heads of terms for the Liaison Agreement can be found in Annex D

Information flow between key stakeholders e.g., T&SCo, regulators, counterparty bodies, users and government will be very important and T&SCo will be expected to be transparent, especially in circumstances where the profile/likelihood of the GSP risk is impacted (e.g., if there is a risk of asset stranding or long-term/enduring network unavailability).

More broadly, government recognises that this is a complex regulatory environment, and there is a need for alignment and coordination across the landscape. There are a multitude of interdependencies that could impact decision making in the future and there is a need to consider how best to structure the strategic decision-making process. A significant number of interdependencies are potentially relevant to GSP arrangements e.g., allowing the continuation of SCA support while the Regulator considers whether to allow for additional capex.

Government is considering arrangements and is committed to putting in place a structure that enables robust and effective decisions to take place across the landscape.

## GSP and calculating compensation on discontinuation

In the event of government triggering the Discontinuation Agreement, the T&SCo will be entitled to compensation.

It is expected that the compensation will be calculated in line with the following principles:

- debt will be compensated to the actual level of debt (subject to a cap at the RAV value), with an amount for debt breakage costs under an agreed hedging policy;
- compensation to equity holders is proposed as the residual value of the RAV, once debt have been paid; and
- equity compensation may be subject to a retention to fund immediate make-safe activities to an agreed discontinuation plan up to an agreed cap, to the extent not covered by the decommissioning plan.

A hedging policy will to be developed to help T&SCo understand what is likely to be considered an efficient approach. This will be relevant in the determination that any debt breakage costs are appropriate. If they are not appropriate, then excess costs will count against the compensation paid to equity.

The total value of T&SCo's portion of the RAV is expected to be depreciated over the life of the assets. We therefore anticipate that the profile of the potential compensation provided by the Discontinuation Agreement for an asset stranding scenario (i.e., discontinuation) would increase during initial construction (post-FID), and any further rounds of construction before declining to a nil value by the time that injection stops.

Once discontinuation has been triggered and T&SCo has received its compensation, all remaining assets and liabilities may be transferred – either to a post-operations successor entity ('T&SCo Successor') or to government pursuant to the Discontinuation Agreement, which may be supplemented by a statutory transfer scheme. A statutory transfer scheme would enable the SoS to transfer all or part of the property, rights, liabilities, powers and duties of the T&SCo to a regulator, another body or company (including the relevant licences). This would enable, the rights and liabilities associated with any licence or permit to transfer to the new holder of that licence or permit. This would be relevant for the management of any UK ETS liabilities.

In the context of Leakage of CO<sub>2</sub>, there may be instances where government may look to reduce compensation to equity holders, if some form of gross negligence or wilful misconduct is proven on the part of the T&SCo. This is expanded upon in the 'GSP and Fault' section of this document.

## GSP and insurance

Within the May 2021 document, we identified that T&SCo would be required to make use of commercial insurances and to maintain appropriate insurance coverage during operations to secure eligibility for the GSP. Since May 2021, this concept has been developed further, with key principles being set out below.

We expect that the SCA would work alongside commercial insurance for Leakage of CO<sub>2</sub>, coming into play when insurance limits have been exhausted or where insurance is unavailable or not available on commercially viable terms (for example if costs are excessive). T&SCo will be contractually obligated to have insurance that is available on commercially viable terms and appropriate to cover the risk of Leakage of CO<sub>2</sub>. There are certain types of commercial insurance cover likely to be needed to be able to access GSP support and the arrangements under the SCA, these are set out in **Table 1** below.

**Table 1:** Types of commercial insurance cover likely to be needed to access GSP arrangements

Coverage	Description	Duration	Interfaces
Business interruption	Insurance to ensure T&SCo can continue to service any business-critical needs whilst unable to earn revenue because of an outage caused by a leakage of CO <sub>2</sub> . Insurance to include but not be	From the start of the first regulatory period through to end of operations (last injection)	1) No revenue support from RSA following the occurrence of a CO <sub>2</sub> leak from store  2) May contribute to financial security the OGA will require a permit holder to maintain in order to meet



Coverage	Description	Duration	Interfaces
	limited to operational costs and debt service.		obligations of the operator arising under the storage permit.
Remediation of infrastructure	Insurance to cover the costs associated with taking remedial action to repair/replace any damaged storage site infrastructure to its existing status/condition. Critical keep safe costs would need to be covered in a discontinuation event.	Prior to first injection through to the end of the post closure period.	1) ER to determine whether any additional capex is efficient and appropriate to add to RAV.  2) May contribute to financial security the OGA will require a permit holder to maintain in order to meet obligations of the operator arising under the storage permit.
Environmental damage (remediation)	Insurance for the remediation of any environment damage that is caused by the operation of CO <sub>2</sub> storage sites as necessary to comply with relevant regulations and site storage permits.	Prior to first injection through to the end of the post closure period.	As needed to comply with relevant regulations and site storage permits.
Carbon	Insurance to pay for the procurement of any UK Emission Trading Scheme allowances as a result of CO <sub>2</sub> leakage from a storage complex.	Prior to first injection through to the end of the post closure period.	May contribute to financial security the OGA will require a permit holder to maintain in order to meet all obligations of the operator arising under the storage permit including for the offset of emissions which occur as a result of CO <sub>2</sub> leakage.
Other	Other insurance as may be considered relevant by BEIS for the appropriate management of liabilities	As appropriate depending on the nature of	No requirement to have 3rd party insurance to cover user losses.

Coverage	Description	Duration	Interfaces
	associated with Leakage of CO <sub>2</sub> from a store complex.	the risk being covered.	

There are some interfaces with other parts of the ERR and the broader regulatory landscape including Financial Security that the OGA will require a storage permit holder to put in place prior to first injection and maintain until termination of its permit under Carbon Dioxide Storage and Appraisal licence under the Storage of Carbon Dioxide (Licensing etc.) Regulations 2010 (or equivalent). It is important to note that while some of this coverage (and the SCA) is likely to address aspects of the wider regulatory environment (including some elements of Financial Security required to be put in place by the OGA or relevant regulator and will be determined depending on what coverage is put in place) additional cover may be required.

In addition, we would expect T&SCo to want to consider taking out other various commercial insurance policies typically taken out by corporates. Whether to take out such policies will be commercial matter for T&SCo and the insurance market. Fees for such cover would be assessed as part of the opex allowance under the economic licence.

In most circumstances, commercial insurance should be sufficient to cover the costs associated and make any remediation payments – in which case, the SCA would not need to be triggered. However, situations may arise where this is not the case and SCA support is required.

The SCA will likely mirror commercial insurance coverage and is there to cover the risk of Leakage of CO<sub>2</sub> until the end of injection, or possibly beyond through the post closure period, where the T&SCo or a post-operations successor entity, is unable to bear costs associated with Leakage of CO<sub>2</sub>.

The level of SCA compensation would be dependent on the materiality of the situation, the remediation costs (including the need to remediate any environmental damage), the cost of purchasing carbon allowances and the length of time that remediation might take, impacting revenue availability. While the level of cover required may increase over time, the consequent calls (or forecast calls) on support under the SCA may reach the specified threshold level where government reserves the right to trigger the Discontinuation Agreement.

Where the asset is identified as irreparable, commercial insurances will be expected to continue to respond where appropriate (i.e., to address any environmental remediation and provide for coverage of critical opex and “keep safe” costs), before any call on the SCA. The government would then be entitled to elect to trigger discontinuation under the Discontinuation Agreement.

Normal insurance premia will be part of the opex of T&SCo and hence assessed as part of the opex allowance under the economic licence. This means that it may not be in the interests of users or of government to purchase insurance, which is not commercially viable (for example if costs are excessive). Insurance which is not commercially viable will be viewed as being

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unavailable on the commercial market. At the outset and for the first regulatory period, the range and quantum of the insurance required will be determined by market conditions and will be jointly agreed by government and T&SCo. This will consider available coverage, quantum of coverage, excess and premia. Determination of the appropriate level of insurance should therefore remain flexible and government's approach will not be to insist on a specific amount of cover at any one time, as the market may change over time.

T&SCo will have an obligation to test the market (i.e., to achieve maximum efficiency quantum and coverage) and update regularly, in line with the latest market position, with the Regulator policing whether there has been appropriate market-testing undertaken. The level of insurance will be monitored, and government may challenge T&SCo if it feels that the quantum or coverage of insurance is not as extensive as it should be.

If any dispute arises between T&SCo and government on the appropriate level of commercial insurance required at a given time, there will be provision in the contract arrangements for a dispute resolution procedure.

## GSP charging

Within the May 2021 document, we identified that government may consider charging for the GSP. We have since confirmed that government will charge fees for the SCA. It is currently proposed that there will be no charge for the Discontinuation Agreement because discontinuation is triggered by government and serves effectively to limit exposure under support arrangements in the event of Leakage of CO<sub>2</sub> or a revenue shortfall. Further work will be done on the structure of the SCA fee, but we currently envisage this will include administrative charges and excess arrangements.

The level of risk exposure will be informed by a probability-based analysis and assurance from the commercial insurance market, which should ensure an appropriate level of charging for adhering to subsidy control principles, appropriate management of contingent liabilities in the public sector and polluter pays principles.

It is assumed that government will charge on the basis of the overall risk exposure, and this will be significantly offset by the protection offered by commercial insurance. Charges will also be benchmarked against commercial insurance costs available. This may vary amongst clusters, as different stores will have different risk profiles and risk exposure at different times during the operational period. Charging will be required throughout the lifetime of T&SCo. As set out previously, arrangements for post-operations will be determined at an end-of-life review point. This review point would need to be scheduled toward the tail end of operations to allow for relevant insurance costs and SCA fees to be passed through the ERR.

Further work will be done on the structure of the SCA fee, but we currently envisage this will include an arrangement charge. As with insurance premia, the SCA fees will be assessed as part of T&SCo's opex allowance under the economic licence.

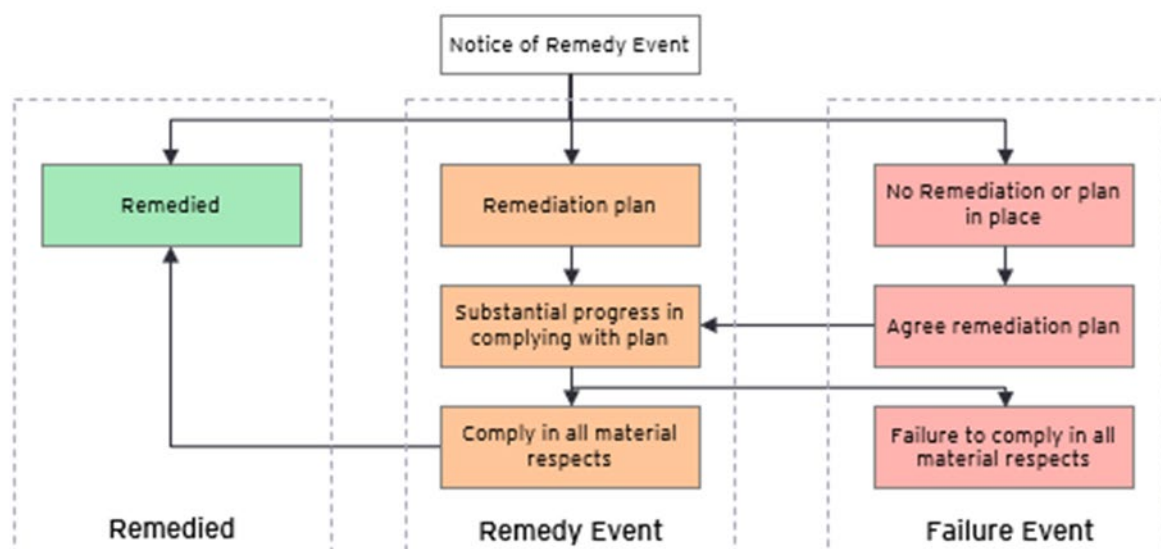
We would expect that the SCA charging mechanism will incentivise T&SCo to take out commercial insurance where it is available, because the SCA fee will reduce as higher levels of commercial insurance are taken by T&SCo, and therefore reduce government's exposure. To ensure the incentive is effective consideration is being given to the possibility of disallowing certain components of the SCA fee (such as the arrangement charge) and deductibles for calling on the SCA, from the assessment of allowed revenue under the ERR.

## GSP fault / negligence

In previous updates, we had not yet considered the impact of fault under the GSP. In this update, we seek to provide clarity on initial principles for dealing with fault/negligence as follows:

- the fault and remedy regime (see Figure 6): this is designed to capture T&SCo's failures which take the T&S network outside the basis for the SoS's offer of the GSP. This regime deals with contractual breaches and breaches of obligations which have (or are reasonably likely to have) a material adverse effect (as defined). This type of fault will be constantly monitored. The remedy regime will have an incentivisation mechanisms (e.g., potential for increased SCA charges, and limitations on equity distributions) and would be designed to restore compliance and avoid the need to trigger the Discontinuation Agreement.

**Figure 6:** Overview of a fault and remedy regime



- equity compensation reduction: the equity compensation payable on discontinuation will be subject to a reduction in the event of gross negligence or wilful misconduct on the part of T&SCo (as further described below).

Identification of gross negligence or wilful misconduct will likely be a retrospective process, and there would be an evidential level that would need to be reached before government would look to change the compensation available to investors. The standard would be high, for

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instance a prosecution of T&SCo for a safety breach that led to a leak or the event being consequent on the failure to undertake in a timely fashion an action ordered by a regulator (e.g., OGA or OPRED), or in very extreme cases the revocation of a permit. The prosecution or breach of order would need to be the cause of the leakage or other qualifying occurrence.

## SCA

The SCA will seek to follow commercial principles. Any occurrence of fault will impact future SCA charging arrangements, e.g., increased charging in future years, and increased deductibles (which would be disallowed in assessment of allowed revenue under the ERR). If subsequent to the SCA being triggered, some form of gross negligence or wilful misconduct was found, this would either be reflected in the equity compensation available under the Discontinuation Agreement (if applicable) or would be reflected in the assessment of the allowed revenue under the ERR in the period following any restart of operations.

## Discontinuation Agreement

In the context of Leakage of CO<sub>2</sub> where there is fault or gross negligence or wilful misconduct which leads to a triggering of the Discontinuation Agreement, compensation payable to equity may be reduced.

If T&SCo is subject to the fault and remedy regime when discontinuation occurs, then any capex spent by T&SCo during the period which T&SCo was subject to the fault regime would not be considered to accrue to the RAV for the purposes of compensation. This, along with other incentives is designed to move T&SCo to return to compliance.

Debt compensation to third party debt providers in this instance would not be affected, but government would be able to reduce or eliminate compensation to equity.

Identification of gross negligence or wilful misconduct will likely be a retrospective process and will inevitably take time. If gross negligence or wilful misconduct is suspected, equity compensation under the Discontinuation Agreement may be delayed (to allow for the process of agreement or determination of the reduction) and, if gross negligence or wilful misconduct is established, reduced or forfeited.

## GSP and additional stores/separation of entity

In the future, there will likely be a need for additional stores, which will likely require a separate/new storage permit. There is also the possibility of a separation of entity in the lifetime of T&SCo. In each of these scenarios, T&SCo would be required to notify government of any planned alteration to infrastructure that might have a material impact on GSP contracts, and the ramifications for any existing GSP arrangements would need to be considered.

Expansion of the GSP mechanism and GSP availability for future stores will not be automatic and will be subject to scrutiny and approval by government.

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Similar to other types of project variation, government would need to agree to expansion of an existing GSP mechanism, alongside the Regulator agreeing to expansion of the RAV – considerations would be made on a case-by-case basis.

In terms of separation of onshore/offshore assets (or different offshore assets) initiated by T&SCo or ordered by a regulator, there will need to be accounting separation. Initial work on this is considered in *Section 2 (Role of T&SCo, Asset Ownership)*. In all scenarios where there is an existing GSP arrangement, government should be no worse off by any separation of assets.

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## Section 8: Special Administration Regime

In circumstances where entities such as water companies, transmission and distribution networks of electricity or gas, national rail, certain electricity suppliers or smart meter providers are running out of funds or are likely to become insolvent, the relevant Secretary of State or Regulator can apply to the High Court for a specific administration order (which is commonly referred to as a “Special Administration Regime”) which would allow a specific administrator to be appointed.

The Special Administrative Regime is underpinned through legislation in the Energy Act 2004 for network companies, the Energy Act 2011 for energy supply companies and the Smart Meters Act 2018 covers the smart meter data and communications company. Under existing legislation, energy administration orders do not apply to electricity generation companies and CCUS Transport and Storage companies (T&SCo’s). Currently, all regulated asset base (“RAB”) projects in the UK have an administration regime set out in legislation.

This allows for the protection of essential services where normal insolvency would cause undue harm and ensures that the essential service continues. This also sets out how the special administrator will behave in such a circumstance, including the provision of support to continue the operation of the asset and how lenders will be treated. The aim of the special administration regime is predominately to prioritise the rescue of the company and continuation of the asset. For T&SCo, keeping the network and storage (the “Project”) operational is likely to offer the most optimal result for emitters and taxpayers.

However, keeping the Project operational may not always be feasible. Indeed, there could be scenarios in which it would not be economic to keep the Project running or other technical or safety reasons why the Project needs to be fully or partially shutdown and/or decommissioned earlier than the expiry of its expected asset life. In such circumstances, the SoS may wish for government to take ownership and/or transfer the Project to another operator using a CCUS statutory transfer scheme.

It is important to note that any transfer of the storage part of the project would be subject to the terms of the storage licence and storage permit, and OGA applicable guidance.

Although an Insolvency Event (in accordance with Insolvency Act 1986 insolvency procedure) for the CCUS T&S network is considered remote the risk does exist, which might trigger the SAR process.

To facilitate the objective of a SAR for T&SCo’s, we consider that new primary and secondary legislation is required. The legislation will set out the special administrator's role and provide for the option of a statutory transfer scheme which may be exercised by the SoS. The special administrator will have the discretion to continue operating or shut down the Project for reasons of public safety, or to minimise costs to the taxpayer. Even if T&SCo is owned by a government body, it would have to satisfy the OGA, that all the duties of the operator were to be fulfilled.

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The aim of a SAR from a public policy perspective is to ensure that the project continues to (or becomes able to) transport and store CO<sub>2</sub> to generate revenue.

Keys aims include:

- safety (including through ensuring the ongoing monitoring and reporting obligations can be met and the decommissioning regime can be supported);
- enabling emitters to continue to capture CO<sub>2</sub>;
- net zero climate emergency;
- secure an end to the special administration by returning the company to a going concern or through a permitted transfer; or
- early shut down, accelerate decommissioning, and monitoring phase earlier than planned if not viable to continue as a going concern.

In circumstances where the Investors have decided not to fund the T&SCo going forward, but the project was still operational or could be made operational with additional funding, the T&SCo could be sold to another T&SCo to enable the project or T&SCo to be run as a going concern to continue to fund the decommissioning or secure an end to the special administration by returning the company to a going concern or through a permitted transfer. To note, SAR is intended as a temporary solution, rather than a long-term fix.

## Transfer Scheme

A CCUS transfer scheme would include a power for SoS to make provision (in secondary legislation) for any of the following:

- the transfer of all or part of the property, rights, liabilities, powers and duties of the T&SCo to a regulator, another body or company (including all relevant licences and storage permits);
- the disapplication of any rights to consent to such transfer under an enactment or agreement or otherwise;
- the modification of rights of termination, or other consequences under contract, of a transfer; and
- other consequential or incidental provisions to support the transfer.

The Department is continuing to develop the statutory transfer scheme, whilst being mindful of existing regulations relating to carbon storage and the Discontinuation Agreement.

A statutory transfer scheme may be relied on in the event of an insolvency, to facilitate the transfer of all or part of the property, rights, liabilities, powers and duties of the T&SCo to a regulator, another body or company (including the relevant licences). Again, in such a circumstance, the scheme may enable the rights and liabilities associated with any licence or permit to transfer to the new holder of that licence or permit.



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## Section 9: Decommissioning

The May 2021 document included only a short reference to decommissioning plans, indicating that the costs for decommissioning would be included in the allowed revenue. This was because of the government's imminent consultation on a funded decommissioning regime for CCUS, published in August 2021, entitled 'Establishing the offshore decommissioning regime for CO<sub>2</sub> Transport and Storage Networks'<sup>45</sup>.

This consultation outlined the government's proposals for and sought views on establishing a funded offshore decommissioning regime, how it would operate in practice, and the requirements set on it.

The government is grateful for the engagement and responses which stakeholders provided on the consultation. This update will cover, in summary, some of the feedback which was received, and the direction of travel for the funded decommissioning regime. Greater detail on these will be set out in the government's response to the consultation, due to be published shortly.

### Funded decommissioning regime

The consultation proposed that a funded decommissioning regime would be established to meet the expected costs associated with the decommissioning of offshore transport and storage infrastructure (including wells and the removal of injection facilities), and post-closure monitoring obligations. This regime would be implemented through the establishment of decommissioning funds for each T&S network which would accrue over their operational lives and ensure funding was available to cover the decommissioning and post-closure monitoring obligations associated with those networks. These funds would support the T&SCo, as the designated decommissioning entity, to pay their liabilities at the end of an asset's operational life, helping them meet their decommissioning and polluter pays obligations. Alongside this, it would provide assurance that the liabilities will be paid, mitigating the risk to the taxpayer.

The allowable revenue, under the ERR, of a T&SCo will be comprised of a number of building blocks, reflecting the costs and returns the T&SCo can reasonably expect to encounter. One of these components will be revenue allocated for the purposes of meeting the decommissioning liability of the T&S network and post-closure obligations. It is with this component of the allowed revenue that the decommissioning funds will accrue, meaning that funding will accrue over the operational life of the network that the decommissioning funds are supporting.

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<sup>45</sup> <https://www.gov.uk/government/consultations/carbon-capture-usage-and-storage-ccus-offshore-decommissioning-regime-for-co2-transport-and-storage>

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## Scope of a funded decommissioning regime

Respondents to the consultation were very supportive of our proposals to distinguish between onshore and offshore decommissioning costs. However, many respondents requested clarity on where the boundary between onshore and offshore infrastructure should be laid, and which regulatory bodies would provide oversight and enforcement of decommissioning standards for infrastructure in the onshore regulatory area. As set out in the consultation, onshore decommissioning costs will form part of the decommissioning building block of the allowed revenue. We will continue to examine the treatment of onshore decommissioning to ensure clarity and coherence with the wider regulated model.

It is envisaged that each CO<sub>2</sub> site would have its own separate decommissioning fund to manage the costs required for decommissioning that site and its associated infrastructure, such as wells, pipelines and platforms. This way, decommissioning funds can map onto and be incorporated into the Carbon Storage Permit issued by the OGA.

Licensees will be obliged, as store operators, to build the decommissioning fund for that store. Integrating the decommissioning fund into the Carbon Storage Permit also ensures that the decommissioning fund is an asset attributed to a site and so would be transferred, along with the storage permit, in the event that a site changes hands. This regime ensures that the decommissioning liabilities of the site, and the means to meet those liabilities, sit with the site's custodian.

In practice, we recognise that a T&SCo's operation is likely to involve a complex network with numerous stores sharing some infrastructure such as trunk pipelines and platforms. Therefore, a T&SCo will manage a portfolio of decommissioning funds. We will continue to work through how best to incorporate shared infrastructure within this model.

## Funding mechanism and cost estimates

The consultation set out our proposals for building the decommissioning funds. The principal mechanism for accruing funds will be through regular funding. A T&SCo will make regular payments into its decommissioning fund(s) through payments derived from user fees charged by the T&SCo, as set out in the ERR. Ensuring decommissioning costs are met by a T&SCo, through revenue charged to emitters ensures that the polluter pays principle is effectively delivered by this funding mechanism. Respondents to the consultation were very supportive of these proposals.

In support of the regular funding mechanism, we suggested the option of investing capital accrued in the funds. Respondents to the consultation were eager to recommend that investments should be made with the aim of retaining the funds' value over time against the impact of inflation, but cautioned against exposing the funds' capital to the risks associated with more ambitious investing decisions. Further details around the management of the fund and around the conditions for investment will be set out in due course.

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The funded decommissioning regime is reliant on accurate and robust estimates for the overall decommissioning liability. The consultation set out to clarify the roles played by the regulatory bodies in this area: the OPRED and the OGA. The consultation proposed establishing OPRED as the primary regulator for estimating the decommissioning liability and undertaking periodic reviews; however, the consultation also recognised that the OGA would have a consultative role advising on the technical requirements and associated costs for decommissioning infrastructure associated with the injection site.

Respondents to the consultation stressed the need to involve industry, and in particular the T&SCo, in this process, given their expertise and knowledge of the network. We are supportive of this involvement, and envisage that OPRED, with support from the OGA, would scrutinise the T&SCo's methodology and either approve their figure or recommend where the estimate should be amended. This will ensure the most knowledgeable stakeholders are involved from the beginning.

## Accrual period and profile

The decommissioning fund will accrue funds during the operational life of the CO<sub>2</sub> store, beginning when the decommissioning component of the allowed revenue is received by the T&SCo with first injection. Capital will accrue in the fund until it reaches its target value, which must happen in time for when decommissioning activities can take place. Some respondents to the consultation advised including a buffer into the accrual of the funds, either by aiming to reach the target value of a fund a few years ahead of a store's completion, or by adding a percentage contingency to the estimated decommissioning costs. We agree with the principle of safeguarding the accrual, and will continue to consider the most sensible and reasonable approach for doing so.

The consultation set out the government's expectation that the accrual would follow a straight-line profile as a default, as this was judged to be relatively simple. However, respondents noted their concerns with this, particularly the potential for different emitters to be disproportionately impacted. Given this feedback, the government will consider further the relative merits and disadvantages of each approach to determine the best mechanism.

As outlined in the consultation, when the funding has accrued and decommissioning activities are due to take place, the designated decommissioning entity will need to secure approval from OPRED before accessing the funds to pay for decommissioning costs. There will also be provision to cover decommissioning activities which may be required during operational life. This sits alongside wider conditions on the nature of, and access to, the decommissioning funds aimed at preventing mis-use or fraud.

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## Treatment of re-used assets and their decommissioning liabilities

The opportunity to re-use oil and gas assets for the purposes of CCUS presents potentially significant cost savings for T&SCos as well as the chance to avoid the environmental impacts that would be caused by the production and disposal of additional infrastructure. However, existing infrastructure must also be of suitable condition to satisfy the T&SCos and the necessary regulatory authorities that it will provide VfM and withstand the specific demands of CO<sub>2</sub> transport and storage. Furthermore, where re-used assets are brought into the CCUS networks, their costs and existing liabilities will need to be factored into the regulated model. In particular, we will need to manage the treatment of their decommissioning liabilities within the CCUS decommissioning funds.

Where an asset is viable for re-use, the consultation proposed making Change of Use Relief (CoUR) available in certain circumstances, and on the condition that the decommissioning fund is 'topped-up' by an amount reflective of the existing decommissioning liability associated with that asset. If this condition was met, CoUR would mean that the existing liability chain established under the Petroleum Act 1998 would sever, removing any obligation for decommissioning liabilities for all previous owners of the infrastructure. This proposal received broad support from respondents, and the government will look to make the necessary amendments to the existing legislation to facilitate this, when Parliamentary time allows.

The consultation also recognised that operators may not want to seek CoUR in all circumstances of re-use. For such cases, the consultation set out that the decommissioning funds would accrue as if they were new-build assets. However, responses to the consultation and further examination of this proposal have identified that it would not meet the polluter pays principle, and concerns around intergenerational fairness regarding long-term liabilities. Instead, we are considering alternative models which looks to deliver a more balanced approach to the treatment of existing decommissioning liabilities. Specifically, this will balance the upfront certainty provided by the top-up of the CoUR model, and the flexibility sought by respondents to the consultation. More detail on this will be set out in the government's response to the consultation, due to be published shortly. More generally, we are considering how re-used infrastructure is being treated overall in the regulated model. We want to encourage re-use where reasonable. But this must be done in a proportionate manner which does not create opportunities for abuse, particularly circumstances which might leave the taxpayer at a disadvantage. We will continue to engage stakeholders as we develop our overall approach to re-use, and further detail will be set out in due course.

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## Section 10: Next Steps

This document reflects the work we have done to date to progress the TRI model design following in the December 2020 and May 2021 documents. We will continue to develop further the detailed structures and mechanisms of with the objective of finalising the TRI model in 2022. This work will be undertaken in close coordination with the development of the business models for power, industrial carbon capture, Hydrogen and CIF. Further, as flagged in section 2 (The Role of T&SCo), we intend to commence working more closely with industry with technical expertise and specialisms to develop the network codes.

We intend to publish a further update by Q3 2022, then working with industry have finalised conditions precedents for the T&SCo's sequenced in Track 1 in line with government ambitions to have them operational in the mid-2020s.

## Section 11: Glossary

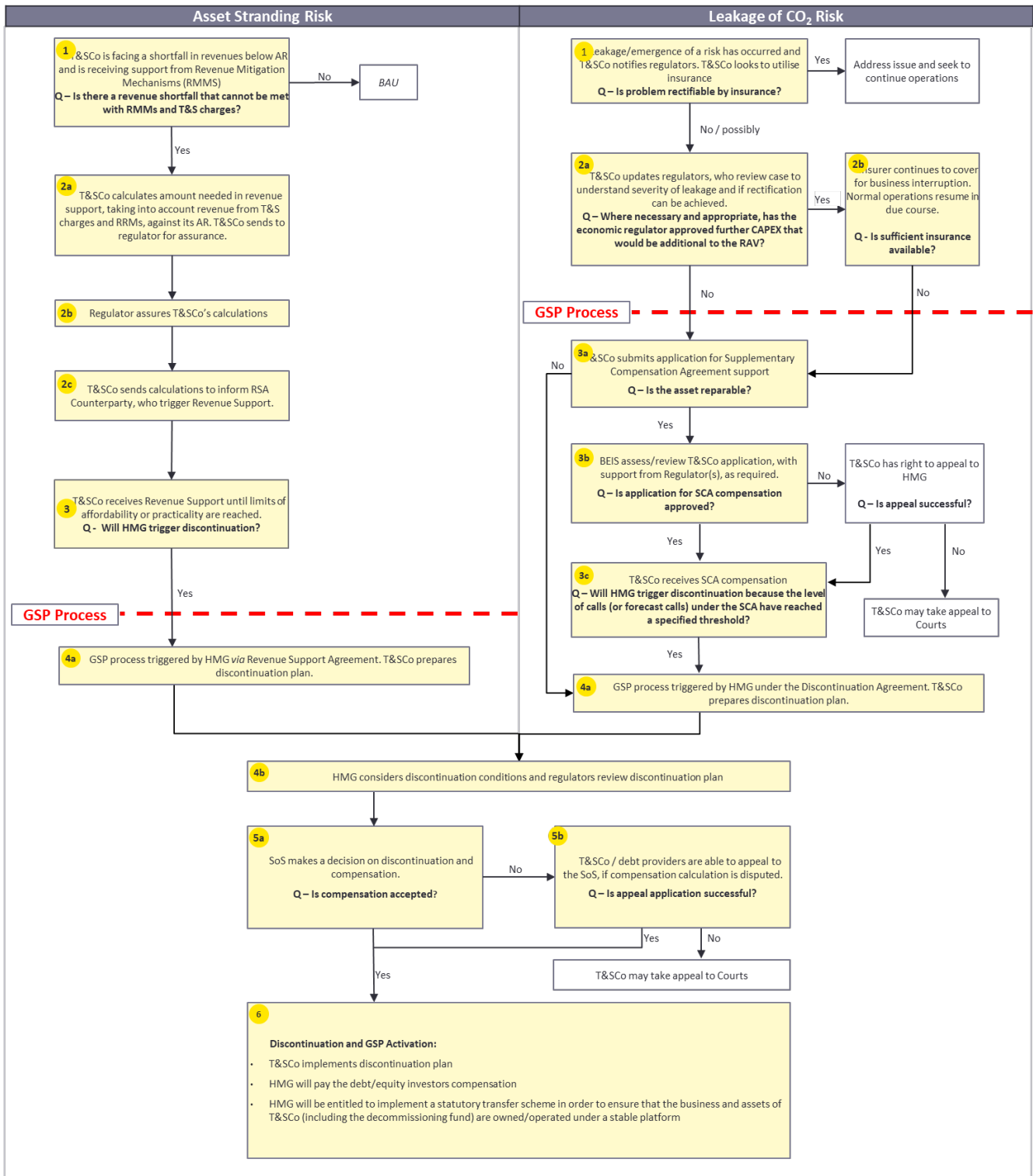
Term	Description
BECCS	Bio-Energy with CCS
BEIS	Department for Business, Environment and Industrial Strategy
Capex	Capital Expenditure
CCUS	Carbon Capture, Usage and Storage
CCS	Carbon Capture and Storage
Cluster	Transportation and storage network (incorporating the onshore and offshore network and offshore storage facility) and an associated first phase of carbon capture projects.
COD	Commercial Operational Date
CfD	Contracts for Difference, including the DPA and ICC Contract
CIF	CCS Infrastructure Fund
DPA	Dispatchable Power Agreement
December 2020 document	The Carbon Capture, Usage and Storage Business Models update published in December 2020: <a href="https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models">https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models</a>
Economic licence	The economic licence expected to be granted by the Regulator to a company licensed to provide transport and storage services (T&SCo) under government's CCUS programme
ERR	Economic Regulatory Regime
EWS	Early Works Support
FEED	Front End Engineering Design
FID	Final Investment Decision
FOAK	First-Of-A-Kind
GSP	Government Support Package

ICC	Industrial Carbon Capture
ICC Contract	Industrial Carbon Capture Contract
LA	Liaison Agreement
LCH	Low Carbon Hydrogen
Leakage of CO <sub>2</sub>	This has the meaning given to this term in Section 7 of this document.
May 2021 document	The Carbon Capture, Usage and Storage Business Models update published in May 2021: <a href="https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models">https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models</a>
NPT	Non-pipeline transportation
Offshore	The offshore element of the CO <sub>2</sub> transportation network up to the point where CO <sub>2</sub> enters the geological Storage. Note: This excludes shipping transportation.
OGA	Oil and Gas Authority
Onshore	The onshore element of the CO <sub>2</sub> transportation network which may include intermediate CO <sub>2</sub> storage for T&S operational purposes. Note: This excludes road and rail transportation.
Opex	Operating Expenditure
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
PCR	Post Construction Review
Regulator	The independent economic regulator of the Economic Regulatory Regime
RAM	Revenue Adjustment Mechanism
RAB	Regulatory Asset Base
Revenue Support	Revenue support under the RSA
RMM	Risk Mitigation Mechanism
RSA	Revenue Support Agreement

RSA Counterparty	The counterparty to the Revenue Support Agreement
RUI	Rolled Up Interest
SCA	Supplementary Compensation Agreement
Storage	Geological store for the captured CO <sub>2</sub> from the end of the injection well.
TCW	Target Commissioning Window, which is defined as
T&S	Transport and Storage
T&SCo	A company licensed to provide transport and storage services
TRI	T&S Regulatory Investment
VfM	Value for Money



# Appendix 1: GSP Process Diagrams



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This publication is available from: [www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models](https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models)

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## **APPENDIX CC.2.8**

## ExQ2 Appendix CC.2.8

Table Error! No text of specified style in document.-1. Potential ICCIs and Relevant Embedded Measures

Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Project phase	Receptor Sensitivity to Climate Hazard	Description of Potential ICCI	Embedded Design Measures	Likelihood of an impact occurring to this receptor	Likelihood of an ICCI impact occurring	Consequence of impact occurring	ICCI Significance Level	Significance	Additional mitigation measures
Increase droughts	Possible	Air quality	Construction	Medium	Increased construction dust	Consequence is minimised through the measures incorporated into the (Framework CEMP e.g. reduce dust emissions through the effective transportation and storage of materials), including the proposed monitoring regime.	Unlikely	Low	Low	Negligible	No	None
Sea level rise	Very Likely	Marine Mammals	Construction	Very High	Loss of suitable haul-out areas within Seal Sands and the wider Tees Estuary for seals	None considered	Unlikely	Medium	Low	Minor	No	None
Increase in annual rainfall	Possible	Flood Risk - downstream receptors	Operation	High	Frequency and duration of flooding from all sources	Climate change influence expected flows will be accommodated in the design of drainage infrastructure to ensure appropriate storage for anticipated flows (e.g. in attenuation ponds in the surface water drainage system). Flood Emergency Response Plan. Drainage Strategy	Unlikely	Low	High	Moderate	No	None
Increase to winter rainfall	Very Likely	Tees Bay waterbody	Operation	High	See- increase to annual rainfall: flood risk	See- increase to annual rainfall: flood risk.	Unlikely	Medium	Medium	Moderate	No	None
Increase to winter rainfall	Very Likely	Flood Risk	Operation	High	See- increase to annual rainfall: flood risk	See- increase to annual rainfall: flood risk.	Unlikely	Medium	High	Major	Yes	None
Sea level rise	Very Likely	Marine Mammals	Operation	Very High	Loss of suitable haul-out areas within Seal Sands and the wider Tees Estuary for seals	None considered	Unlikely	Medium	Low	Minor	No	None
Sea level rise	Very Likely	Marine Mammals	Decommissioning	Very High	Loss of suitable haul-out areas within Seal Sands and the wider Tees Estuary for seals	DEMP will be developed and agreed with the Environment Agency and other stakeholders. This shall consider in detail all potential environmental risks of the Site and would be expected to consider baseline conditions at that time.	Possible	Medium	Low	Minor	No	None
Increase in annual rainfall	Possible	Flood Risk - downstream receptors	Decommissioning	High	Frequency and duration of flooding from all sources	Climate change influence expected flows will be accommodated in the design of drainage infrastructure to ensure appropriate storage for anticipated flows (e.g. in attenuation ponds in the surface water drainage system). Flood Emergency Response Plan. Drainage Strategy.	Unlikely	Low	High	Moderate	No	None

Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Project phase	Receptor Sensitivity to Climate Hazard	Description of Potential ICCI	Embedded Design Measures	Likelihood of an impact occurring to this receptor	Likelihood of an ICCI impact occurring	Consequence of impact occurring	ICCI Significance Level	Significance	Additional mitigation measures
DEMP.												
Increase to winter rainfall	Very Likely	Flood Risk	Decommissioning	High	See- increase to annual rainfall: flood risk	See- increase to annual rainfall: flood risk	Unlikely	Medium	High	Major	Yes	None

## **APPENDIX CC.2.12**



Neutral Citation Number: [2022] EWHC 1841 (Admin)

Case No: CO/126/2022  
CO/163/2022  
CO/199/2022

**IN THE HIGH COURT OF JUSTICE**  
**QUEEN'S BENCH DIVISION**  
**ADMINISTRATIVE COURT**

Royal Courts of Justice  
Strand, London, WC2A 2LL

Date: 18 July 2022

**Before :**

**THE HON. MR JUSTICE HOLGATE**

-----  
**Between :**

**THE QUEEN**

**on the application of**

**(1) FRIENDS OF THE EARTH LIMITED**

**(2) CLIENTEARTH**

**(3) GOOD LAW PROJECT AND JOANNA  
WHEATLEY**

**Claimants**

**- and -**

**SECRETARY OF STATE FOR BUSINESS,  
ENERGY AND INDUSTRIAL STRATEGY**

**Defendant**

-----  
**David Wolfe QC, Catherine Dobson and Nina Pindham (instructed by Leigh Day) for the  
First Claimant**

**Jessica Simor QC and Emma Foubister (instructed by ClientEarth) for the Second  
Claimant**

**Jason Coppel QC and Peter Lockley (instructed by Baker McKenzie) for the Third  
Claimants**

**Richard Honey QC, Ned Westaway and Flora Curtis (instructed by Government Legal  
Department) for the Defendant**

Hearing dates: 8 and 9 June and 15 July 2022  
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**Approved Judgment**

## Mr Justice Holgate:

### Introduction

1. Climate change is a global problem. In *R (Spurrier) v Secretary of State for Transport* [2020] PTSR 240 the Divisional Court gave a summary of some of the main issues involved at [558]-[563].
2. In 1992 the United Nations adopted the United Nations Framework Convention on Climate Change (“UNFCCC”). Following the 21<sup>st</sup> 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub>e (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 <sub>2</sub> 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 CO<sub>2</sub>e and CB2 by 384 Mt CO<sub>2</sub>e. 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.

13. These three claims for judicial review do not involve any legal challenge to the setting of the net zero target in s.1 or to the setting of any carbon budget (including CB6). Instead, it is alleged that the defendant has failed to comply with s.13 and/or s.14 of the CCA 2008.
14. In summary, s.13 imposes a duty on the Secretary of State to “prepare such proposals and policies” as he considers will enable the carbon budgets which have been set under the CCA 2008 to be met. It is common ground that this is a continuing obligation. Section 14 provides that “as soon as is reasonably practicable” after setting a carbon budget, the Secretary of State must lay before Parliament a report setting out proposals and policies for meeting the current and future “budgetary periods” up to and including that budget.
15. Following the setting of CB6, the Secretary of State laid the NZS before Parliament on 19 October 2021 as a report under s.14 of the CCA 2008.
16. The claimants apply for judicial review in relation to the decisions on 17 October 2021 (a) to approve the proposals and policies prepared under s.13 (as set out in the NZS) and (b) to publish the NZS as a report under s.14. In summary, the grounds which they pursued at the hearing were as follows:-

*Ground 1: the Section 13 ground*

The defendant erred in law regarding his obligation under s.13 of the CCA 2008, in that:

- (i) On a proper interpretation of s.13, he was not entitled to reach the conclusion that the proposals and policies in the NZS would enable the carbon budgets to be met where the quantified effects of those measures were estimated to deliver less than 100% (i.e. around 95%) of the emissions reductions required to meet CB6;
- (ii) Through insufficiencies in the briefing material with which he was supplied, the defendant failed to take into account relevant considerations which were “obviously material”, and therefore matters he had to consider under s.13 of the CCA 2008, namely:
  - (a) the time-scales over which the proposals and policies were expected to take effect;
  - (b) the contribution which each quantifiable proposal or policy would make to meeting the carbon budgets; and
  - (c) in relation to his qualitative judgment, which proposals and policies would enable the 5% shortfall for CB6 to be met.

*Ground 2: the Section 14 ground*

The defendant failed to include in the NZS the information legally required to discharge his reporting obligations under s.14 CCA, namely:

- (i) an explanation for his conclusion that the proposals and policies within the NZS will enable the carbon budgets to be met;
- (ii) an estimate of the contribution each of those proposals and policies is expected to make to required emissions reductions in so far as they are judged to be quantifiable; and
- (iii) the time-scales over which those proposals and policies are expected to have that effect.

*Ground 3: the Human Rights ground*

In the alternative, ss.13 and 14 of the CCA 2008 have the effect for which the Claimants contend applying s.3 of the Human Rights Act 1998 (“the HRA 1998”), because to construe them in the way for which the defendant contends would contravene or risk contravention of Convention rights.

17. Friends of the Earth Limited is a not-for-profit organisation which undertakes campaigning and other environmental work in pursuit of environmental objectives. It includes over 300 community groups and has over 300,000 supporters. It was involved in campaigns contributing to the enactment of the CCA 2008. It is now concerned with what it describes as the pressing need for action to be taken on climate change, to ensure a safe and just outcome to the problem for current and future generations.
18. ClientEarth is an environmental law charity. Its charitable objects include the enhancement, restoration, conservation and protection of the environment, including the protection of human health for the public benefit.
19. Good Law Project is a not-for-profit campaign organisation that relies upon the law to protect the interests of the public. One of its three priority areas of work is the protection of the environment. Because the defendant contended that Good Law Project could not rely upon s.3 of the HRA 1998 in relation to ground 3, being a party not affected by any breach of a human right, a successful application was made to join Ms. Joanna Wheatley as a second claimant in CO/199/2022. It is submitted that her witness statement shows that she has sufficient status as a “victim” for the purposes of the human rights claim, in so far as that may be necessary for ground 3.
20. The claimants acknowledge that much of the content of the NZS is commendable. Accordingly, they do not ask the court to quash the NZS. Instead, in the event of one or more of the grounds succeeding, they ask the court to grant declaratory relief.
21. On 1 March 2022 Cotter J granted permission to apply for judicial review in each of the claims. He ordered that they be heard together because of the significant overlap between the grounds. He indicated that the submissions in all three proceedings should be presented in a single skeleton on each side of the argument. The parties did so in an exemplary manner. Likewise, through good co-operation, they were able to agree reduced bundles containing only material necessary for the legal argument and a timetable dividing responsibility for different subjects between counsel. I am very grateful to all counsel and their respective teams for this assistance.

22. The courts are well aware of the profound concerns which many members of the public have about climate change and the steps being taken to address the problem. So it is necessary to repeat what was said by the Divisional Court in *R (Rights: Community: Action) v Secretary of State for Housing Communities and Local Government* [2021] PTSR 553 at [6]: -

“It is important to emphasise at the outset what this case is and is not about. Judicial review is the means of ensuring that public bodies act within the limits of their legal powers and in accordance with the relevant procedures and legal principles governing the exercise of their decision-making functions. The role of the court in judicial review is concerned with resolving questions of law. The court is not responsible for making political, social, or economic choices. Those decisions, and those choices, are ones that Parliament has entrusted to ministers and other public bodies. The choices may be matters of legitimate public debate, but they are not matters for the court to determine. The court is only concerned with the legal issues raised by the claimant as to whether the defendant has acted unlawfully.”

23. The remainder of this judgment is set out under the following headings:

Heading	Paragraph numbers
The challenge to the Heat and Buildings Strategy	[24] – [27]
The statutory framework	[28] – [59]
The setting of CB6	[60] – [68]
The Net Zero Strategy	[69] – [99]
The defendant’s evidence on the process leading to the Net Zero Strategy	[100] – [146]
The assessment of the Net Zero Strategy by the Committee on Climate Change	[147] – [154]
Ground 1	[155] – [222]

Ground 2	[223] – [260]
Ground 3	[261] – [275]
Section 31(2A) of the Senior Courts Act 1981	[276] – [278]

### **The challenge to the Heat and Buildings Strategy**

24. On the same day as it published the NZS, the Government also issued related policy documents including its Heat and Buildings Strategy (“HBS”), Net Zero Research and Innovation Framework and HM Treasury’s Net Zero Review. In its Statement of Facts and Grounds, Friends of the Earth also challenged the HBS because of a failure to comply with the public sector equality duty under s.149 of the Equality Act 2010. Here again, the claimant did not ask for the Strategy to be quashed, rather that a declaration be granted that the defendant had failed to comply with s.149.
25. The parties have submitted a draft consent order in which the defendant accepts that ground 4 is made out. He agrees that no Equality Impact Assessment was carried out for the HBS and that one should now be carried out.
26. The parties also agree that: -
- (i) The defendant did comply with s.149 of the 2010 Act in relation to the NZS;
  - (ii) That compliance does not overcome the failure to comply with s.149 in relation to the HBS;
  - (iii) That failure in respect of the HBS does not taint the NZS or the process followed in relation to that document.
27. Accordingly, it is agreed between the parties, and I accept, that the Court should declare that the defendant did not comply with s.149 of the 2010 Act in relation to the HBS. There is support in the authorities for the approach which the parties have agreed to take (see e.g. *R (West Berkshire District Council) v Secretary of State for Communities and Local Government* [2016] 1 WLR 3923 at [86] – [88]; *R (BAPIO Action Limited) v Secretary of State for the Home Department* [2007] EWHC 199 (Admin) at [64] – [70]; (*R (Cushnie) v Secretary of State for Health* [2015] PTSR 384 at [95] – [117]).

### **The statutory framework**

#### *Climate Change Act 2008*

28. Part 1 of the Act deals with “carbon target and budgeting”. Section 1(1) provides: -

“It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline.”

The “1990 baseline” is the aggregate of net UK emissions of CO<sub>2</sub> for that year, plus the net UK emissions of each of the other targeted GHG in the base years specified in s.25. “Net UK emissions” means the emissions of a GHG from a source in the UK less the removals of that gas from the atmosphere over the same period through land use, land-use change or forestry activities in the UK (s.29(1)). That amount must be determined in accordance with “international carbon reporting practice” (as defined in s.94).

29. The target in s.1(1) is set by reference to the “net UK carbon account”. The account shows the amount of net UK emissions of targeted GHGs over a period (see s.29), less the amount of “carbon units” credited plus the amount of carbon units debited to that account during the same period (s.27(1)). Carbon units and carbon accounting are dealt with in s.26.
30. Regulations made by the Secretary of State under s.26 define carbon units. These include GHG emissions controlled by a cap-and-trade scheme. This is a market-based pricing mechanism to incentivise the reduction of emissions in a cost-effective way. A cap is set on the total amount of GHG which may be emitted over a period by those sectors which fall within the scheme. The cap is divided into allowances which may be bought and sold. The cap is reduced over time so as to provide a long-term market signal to encourage business to plan and invest in abatement.
31. Following the departure of the UK from the EU, the UK Emissions Trading Scheme (“UKETS”) was introduced on 1 January 2021. UK businesses are not trading emissions allowances with operators outside the UK. It is common ground that the NZS does not rely upon carbon trading for meeting the approved carbon budgets. Consequently, the NZS focuses on “net UK emissions”.
32. Section 4 imposes duties on the Secretary of State to set carbon budgets and to ensure that the UK carbon account does not exceed those budgets:-

“ (1) It is the duty of the Secretary of State—

(a) to set for each succeeding period of five years beginning with the period 2008–2012 (“budgetary periods”) an amount for the net UK carbon account (the “carbon budget”), and

(b) to ensure that the net UK carbon account for a budgetary period does not exceed the carbon budget.

(2) The carbon budget for a budgetary period may be set at any time after this Part comes into force, and must be set—

(a) for the periods 2008–2012, 2013–2017 and 2018–2022, before 1 June 2009;

(b) for any later period, not later than 30th June in the 12th year before the beginning of the period in question.”

33. Accordingly, for the carbon budgets beginning with CB4 the Secretary of State is obliged to set the budget 11½ years before the beginning and 16½ years before the end of the relevant 5 year budgetary period. As we have seen, s.4 involves the setting of a net amount for the whole of any such period. Additionally s.5 requires that the annual equivalent of the figure set for CB3 is at least 34% lower than the 1990 baseline and that for CB9 (which includes 2050) is lower than that baseline by at least 100% (i.e. net zero). Section 5(1)(c) enables the Secretary of State to specify by order annual equivalent levels for budgets after CB9.

34. Section 8 deals with the setting of a carbon budget:

“(1) The Secretary of State must set the carbon budget for a budgetary period by order.

(2) The carbon budget for a period must be set with a view to meeting—

(a) the target in section 1 (the target for 2050), and

(b) the requirements of section 5 (requirements as to level of carbon budgets) and complying with the European and international obligations of the United Kingdom.

(3) An order setting a carbon budget is subject to affirmative resolution procedure.”

35. Prior to laying a draft order before Parliament setting a carbon budget, under s. 9(1) and (2) the Secretary of State must take into account the advice provided by the Committee on Climate Change (“CCC”) under s.34 (see below) and any duly made representations made by the other national authorities<sup>1</sup>. If the draft order would set a budget at a different level from that recommended by the CCC the Secretary of State must publish a statement setting out the reasons for that decision (s.9(4)).

36. Section 10(2) sets out matters which must be taken into account by the CCC in giving its advice under s.34 and by the Secretary of State in making any decision under Part 1 of the Act in relation to carbon budgets: -

“(2) The matters to be taken into account are—

(a) scientific knowledge about climate change;

(b) technology relevant to climate change;

(c) economic circumstances, and in particular the likely impact of the decision on the economy and the competitiveness of particular sectors of the economy;

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<sup>1</sup> By s.95 “national authorities” refers to the Secretary of State and the devolved administrations.

- (d) fiscal circumstances, and in particular the likely impact of the decision on taxation, public spending and public borrowing;
- (e) social circumstances, and in particular the likely impact of the decision on fuel poverty;
- (f) energy policy, and in particular the likely impact of the decision on energy supplies and the carbon and energy intensity of the economy;
- (g) differences in circumstances between England, Wales, Scotland and Northern Ireland;
- (h) circumstances at European and international level;
- (i) the estimated amount of reportable emissions from international aviation and international shipping for the budgetary period or periods in question”

Thus, the setting of a carbon budget for the UK involves decision-making at a high strategic level involving a wide range of environmental, socio-economic, fiscal, political, scientific and technological considerations.

37. Under s.2 the Secretary of State may by order alter the 2050 target percentage in s.1. By s.6 the Secretary of State may alter the target levels under s.5 for CB3 and budgets after CB9. Those powers may only be exercised in limited circumstances, which include significant developments in scientific knowledge about climate change or in international law or policy. They reflect the evolving nature of the science, international law and policy, and the predictive judgments which fall to be made. The procedures are subject to requirements for consultation with the CCC and the other national authorities (ss.3 and 7). Where the Secretary of State’s draft order differs from a recommendation of the CCC, he must publish a statement setting out the reasons for that decision (s.3(6) and s.7(6)). The Secretary of State is required to lay an order under ss.2 or 6 before Parliament for approval by the affirmative resolution procedure.
38. An order setting a carbon budget may not be revoked after the date by which it was required to be set (s.21(1)). But it may be amended after that date, provided that the Secretary of State is satisfied that since the budget was set (or previously altered) there have been “significant changes affecting the basis on which the previous decision was made” (s.21(2)). Once a budgetary period has begun, those changes must postdate that commencement and once it has ended, the budget may not be amended (s.21(3) and (4)). An order under s.21 is subject to similar consultation requirements (s.22) and the affirmative resolution procedure in Parliament (s.21(5)). If the draft order differs from a recommendation made by the CCC then the Secretary must publish a statement setting out the reasons for that decision (s. 22(7)).
39. Sections 16 to 20 deal with the determination of whether the objectives of carbon budgeting have been met.



40. Section 16 requires the Secretary of State to lay an annual report before Parliament stating for the year in question the amount of UK emissions, removals and net emissions for each GHG and aggregate amounts for all GHGs, along with the total amounts and details of the number and type of carbon units credited to or debited from the UK carbon account. The statement must be laid before Parliament no later than 31 March in the second year following that to which it relates (s.16(10)).
41. Section 17(1) and (2) allows the Secretary of State to carry back up to 1% of a carbon budget to the preceding budgetary period. Section 17(3) allows the Secretary of State to carry forward the whole or part of any overachievement in relation to a carbon budget to the next budgetary period.
42. By s.18 the Secretary of State must lay before Parliament a final statement for each budgetary period no later than 31 May in the second year following the end of that period. The statement must state the final amount for each GHG of UK emissions, removals, net emissions, the final amount of the carbon units credited to or debited from the net UK carbon account, and the final amount of that account. The report must state whether the powers under s.17 have been used. By s.18(7) the figures laid before Parliament in a final statement are determinative as to whether the carbon budget for the relevant period (and the duty under s.4(1)(b)) have been met. Section 18(8) provides that: -
- “If the carbon budget for the period has not been met, the statement must explain why it has not been met”.
43. Section 19 provides that where according to the s.18 statement, the net UK carbon account has exceeded the carbon budget, the Secretary of State must lay before Parliament “a report setting out proposals and policies to compensate in future periods for the excess emissions”. Thus, the CCA 2008 provides mechanisms to assist Parliament in holding the Secretary of State to account in relation to his duty under s.4.
44. Section 20 requires the Secretary of State to lay before Parliament no later than 31 May 2052 a final statement for the year 2050 setting out for that year essentially the information required under s.16. The issue of whether the target in s.1 for 2050 is met will be determined by that final statement. If the 2050 target is not met, the statement must explain why that is so (s.20(6)).
45. Sections 13 and 14 deal with the Secretary of State’s duties to prepare proposals and policies for meeting the carbon budgets and to report on those matters to Parliament after each carbon budget is set, once every five years. These provisions lie at the heart of the claims for judicial review.
46. Section 13 provides: -

**“Duty to prepare proposals and policies for meeting carbon budgets**

(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.”

47. Section 14 provides: -

**“Duty to report on proposals and policies for meeting carbon budgets**

(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”

The NZS was laid before Parliament as the Secretary of State's report under s.14 following the setting of CB6.

48. In addition, s.12 imposes a duty on the Secretary of State to lay a report before Parliament after a carbon budget is set giving “indicative annual ranges” for the net UK carbon account for each year falling within that period. Section 12 provides: -

“(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 an indicative annual range for the net UK carbon account for each year within the period.

(2) An “indicative annual range”, in relation to a year, is a range within which the Secretary of State expects the amount of the net UK carbon account for the year to fall.

(3) Before laying a report under this section before Parliament, the Secretary of State must consult the other national authorities on the indicative annual ranges set out in the report.

(4) The Secretary of State must send a copy of the report to those authorities.”

49. The statute expresses the time limit for the laying of a report under s.12 and s.14 in the same language: -

“as soon as is reasonably practicable after making an order setting the carbon budget for a budgetary period”

It appears that for earlier carbon budgets the Secretary of State has laid a single report before Parliament under ss.12 and 14. However, the s.12 report for CB6 was not laid until 14 December 2021. The Court has not seen this document, but was told that the information provided was in substance the same as that set out in the Technical Annex to the NZS at table 7 on p.322 (see below).

50. Part 2 of the CCA 2008 deals with the CCC. Section 32 and schedule 1 establish the Committee. It comprises the chairman and up to 8 other members appointed by the national authorities. The appointments must have regard to the desirability of securing that the Committee as a whole has experience in, or knowledge of, the areas set out in para.1(3) of schedule 1: -

“(a) business competitiveness;

(b) climate change policy at national and international level, and in particular the social impacts of such policy;

(c) climate science, and other branches of environmental science;

(d) differences in circumstances between England, Wales, Scotland and Northern Ireland and the capacity of national authorities to take action in relation to climate change;

(e) economic analysis and forecasting;

- (f) emissions trading;
- (g) energy production and supply;
- (h) financial investment;
- (i) technology development and diffusion.”

That list reflects the matters set out in s.10(2) which the CCC are required to advise upon and the Secretary of State is required to take into account (s.10(1)).

51. Under s.33 the CCC is under a duty to advise the Secretary of State on whether the percentage target for 2050 in s.1(1) should be amended and to publish that advice (s.33(5)). It did so following the Paris Agreement.
52. Under s.34 the CCC is under a duty to advise the Secretary of State not later than 6 months before the last date for setting a carbon budget for CB4 onwards on the matters set out in s.34(1). They include the level of the budget, the extent to which the budget should be met by reduction in emissions or by carbon units credited to the UK carbon account, and the contributions that should be made by sectors of the economy covered by carbon trading schemes under Part 3 of the Act and by sectors outside those schemes. The advice must be published (s.34(6)).
53. The CCC must lay before Parliament each year a report setting out its views on the progress made towards meeting carbon budgets that have been set and the 2050 target, and whether those budgets and target “are likely to be met” (s.36(1)). The CCC’s report in the second year after a budgetary period has ended must also give the Committee’s views on the way in which the budget was or was not met and on action taken during the period to reduce UK net emissions (s.36(2)).
54. Section 37 obliges the Secretary of State to lay before Parliament a response to the points raised by each of the CCC’s annual reports under s.36.
55. Section 38(1) requires the CCC to provide advice or other assistance requested by a national authority in connection with its functions under the CCA 2008, progress towards meeting the objectives set by the statute, and any other matter relating to climate change. Section 39 gives the CCC a general ancillary power to do anything that appears to it necessary or appropriate for or in connection with its functions. I accept the submission made by Mr Honey QC, on behalf of the Secretary of State, that ss. 38 and 39 enable the CCC to engage in ongoing dialogue with the Secretary of State and to respond publicly to documents he publishes, such as the NZS.

*Human Rights Act 1998*

56. Section 3(1) of the Act provides: -

“So far as it is possible to do so, primary legislation and subordinate legislation must be read and given effect in a way which is compatible with the Convention rights.”

57. Article 2(1) of the ECHR provides: -

**“Right to Life**

Everyone’s right to life shall be protected by law. No one shall be deprived of his life intentionally save in the execution of a sentence of a court following his conviction of a crime for which this penalty is provided by law”

58. Article 8 of the ECHR provides: -

**“Right to respect for private and family life**

1. Everyone has the right to respect for his private and family life, his home and his correspondence.

2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others.”

59. Article 1 of the First Protocol to the ECHR provides: -

**“Protection of property**

Every natural or legal person is entitled to the peaceful enjoyment of his possessions. No one shall be deprived of his possessions except in the public interest and subject to the conditions provided for by law and by the general principles of international law.

The preceding provisions shall not, however, in any way impair the right of a State to enforce such laws as it deems necessary to control the use of property in accordance with the general interest or to secure the payment of taxes or other contributions or penalties”

**The setting of CB6**

60. On 9 December 2020 the CCC published its advice under s.34 on the setting of CB6. In a detailed and lengthy report the Committee explained why it was recommending that net UK GHG emissions for 2033-2037 be set at 965 Mt CO<sub>2</sub>e, an implied reduction of 78% from the 1990 baseline. As the Chairman said in his foreword, this effectively brought forward the UK’s previous 80% target for 2050 by nearly 15 years. This required *inter alia* the “scaling up” of new policy development and of low carbon investment.

61. In their discussion of how CB6 can be met (p.24) the CCC explained that at the core of their advice were the multiple “scenarios” they had developed exploring the actions required in each sector of the economy to reach the net zero target by 2050. The scenarios explored uncertainties, particularly over how far people will change

behaviour, how quickly technology will be developed and the balance between alternative options. The scenarios were “ambitious”, but bounded by “realistic assumptions” over the speed at which low carbon technologies could be developed and rolled out, and allowed time for supply chains, markets and infrastructure to scale up. The scenarios also recognised other priorities, such as maintaining security of energy supply.

62. The CCC used the insights they gained from this analysis to develop a “Balanced Pathway” as the basis for their recommendations for CB6 and the UK’s NDC. The CCC then summarised actions required in four key areas in line with that pathway, giving a broad indication of the scale of change envisaged and key “phase out dates”, such as the sale of diesel vehicles and gas boilers (pps.25-28).
63. These matters were explained in more detail in chapters 1 and 2. The CCC recognised that while many choices can be made now “over the broad shape of the transition, there remain some decision points for the Government in the coming decade” (p.83). Two “critical decision points” were identified. First, a decision will be required in the mid-2020s on the balance between the use of electrification and hydrogen in decarbonising the heating of buildings. Electrification may reach limits of cost-effectiveness and feasibility in certain parts of industry and the heating of buildings. Second, decisions will be needed in the second half of the 2020s on whether HGVs should be decarbonised through hydrogen or electrification, or a combination of the two (p.83).
64. In chapter 3 of its advice the CCC presented its analysis of future scenarios at a sectoral level, setting out options and impacts for each sector separately. In chapter 5 the Committee assessed the impacts, costs and benefits of its advice across the UK economy.
65. The CCC recommended that in the first half of 2021 the Government should set CB6 and publish its net zero plans and policies to deliver the budget in full, noting that many had been in the course of development since 2019 (pp. 15 and 440). The Committee advised that “the expected impact of policies, including those in early planning, should be quantified and in sum should be enough to meet [CB6] and [the NDC]” (p.15).
66. The CCC expressed their view that sections 13 and 14 of the CCA 2008 required the Government to demonstrate clearly and quantitatively how its proposals will deliver CB6 (p.440). The Government’s response should set out a “quantified set of policy proposals” to deliver CB6 and the 2050 target. CCC referred to the Government’s Energy and Emissions Projections (“EEP”) where the impact of “implemented, adopted and agreed” policies had been quantified. The latest projection to 2035 fell short of the reduction recommended for CB6.
67. The CCC noted that many other policies had been announced or were being developed. They advised the Government to set out the intended effect of these policies and the time-scales over which they are expected to take effect. If “the proposals in sum are insufficient to deliver [CB6] the Government should set out the areas where it will develop further and stronger policies to deliver deeper emissions reductions, and quantify the expected effect of those”. If as individual policies are progressed their expected effect is lower, then the impacts of other policies would need to be increased to fill the gap. Accordingly, the Government’s response should set out “an approach to

its own tracking of policy development and progress to ensure that it stays on track to the Sixth Carbon Budget as circumstances and expectations change” (pp. 440-1).

68. Ms. Sarah James is the Co-Director of the Net Zero Strategy Directorate in the Department for Business, Energy and Industrial Strategy (“BEIS”). In her witness statement she explains that Ministers began to consider the setting of CB6 in early 2021. In March 2021 they agreed that CB6 should be set at the level recommended by the CCC and began discussions about the development of NZS policies with other Ministers across Government, including the Treasury. The Secretary of State made the final decision to set CB6 in April 2021 when he laid the relevant order before Parliament. That order was accompanied by an impact assessment which considered *inter alia* the measures which might be put in place to meet the proposed CB6 level and alternatives. However, no specific proposals or policies were considered or put forward in the impact assessment (WS paras. 15 to 17).

### **The Net Zero Strategy**

69. The NZS states at p. 17: -

“We have hit all of our carbon budgets to date. This document sets out clear policies and proposals for keeping us on track for our coming carbon budgets, our ambitious Nationally Determined Contribution (NDC), and then sets out our vision for a decarbonised economy in 2050.

Whilst there are a range of ways in which net zero could be achieved in the UK, we set out a delivery pathway showing indicative emissions reductions across sectors to meet our targets up to the sixth carbon budget (2033-2037). *This is based on our current understanding of each sector’s potential*, and a whole system view of where abatement is most effective. But we must be adaptable over time, as innovation will increase our understanding of the challenges, bring forward new technologies and drive down the costs of existing ones.” (emphasis added)

70. In para. 40(b) of her witness statement Ms. James explains the use of the word “indicative” in the NZS. The Government’s approach to meeting carbon budgets needs to adapt in response to changes over time, such as developments in technology or markets, which may result in a different “optimal distribution of policy effort”. Accordingly, the “delivery pathway” is described as “indicative” rather than as a fixed target trajectory with emission limits for sectors.
71. Page 39 of the NZS states that decarbonisation measures will not cause emissions to fall to “absolute zero” for all sectors. Some sectors, such as industry, agriculture and aviation, are difficult to decarbonise completely. Accordingly, techniques for removal of GHGs, such as afforestation and carbon capture and storage, are essential to compensate for residual emissions so that net zero can be reached by 2050. That approach accords with the concept of net UK emissions upon which the CCA 2008 is based (see e.g. s.29).

72. Chapter 2 of the NZS sets a framework for the policies which follow. Page 62 explains that the Government has taken a “systems approach” which acknowledges firstly, that society, the environment and the economy are interrelated such that changes in one area may impact on others and secondly, that policy-making needs to be dynamic, responding to technological innovation and continuing to update assumptions which have previously been made. The systems approach also helps to identify interdependencies between policies.
73. There are a range of ways in which net zero may be achieved in the UK by 2050, but the exact technology and energy mix cannot be known as it will depend on how new technologies evolve in future (pp. 68-9). However, the Government expects to rely on the following green technologies and energy carriers: -
- *Electricity* from low carbon generation;
  - *Hydrogen* to complement the electricity system, especially in harder to electrify areas e.g. parts of industry, heating, aviation and shipping;
  - *Carbon capture use and storage* (“CCUS”) which can capture CO<sub>2</sub> from power generation, hydrogen production and industrial processes, and then store it underground or use it;
  - *Biomass* combined with CCUS which can support low carbon electricity, hydrogen generation and low carbon fuels.
74. BEIS used a similar approach to that of the CCC. It developed three modelled scenarios up to 2050 to explore possible energy and technology solutions (pp. 70-73). These are further explained in the Technical Annex (pp. 315-320). Scenario 1 (“High Electrification”) assumes a widespread use of electrification to support decarbonisation of transport, heating and industry, with “deep decarbonisation” of electricity supply relying on renewables, nuclear power and gas combined with CCUS. Scenario 2 (“High Resource”) uses hydrogen to a greater extent than in Scenario 1, particularly for decarbonising buildings, power and heavy vehicles. Both Scenarios 1 and 2 balance residual emissions by relying upon carbon removal, through afforestation and engineered measures, with Scenario 2 assuming a higher level of tree-planting. Scenario 3 (“High Innovation”) assumes greater reliance upon innovation, such as the development of carbon capture, sustainable fuels and zero-emission aircraft. The electricity and hydrogen generation requirements for Scenario 3 fall between those assumed for Scenarios 1 and 2.
75. The NZS states that a key decision on the relative roles of hydrogen and electrification for heating will be taken in 2026 (pp.22, 80, 88, 132 and 136-146). The importance of this decision had been acknowledged in the CCC’s s.34 advice given in December 2020. It goes directly to a major difference between scenarios 1 and 2 and reinforces the explanation given by Ms. James that any pathway produced by a Government at this stage is “indicative”. The decisions which the UK Government and other governments are having to make involve issues of this nature and some unavoidable, substantial uncertainty in making future projections.
76. BEIS used its conclusions from analysing the three 2050 scenarios to develop an “indicative delivery pathway”, or trajectory, of emissions reductions to meet targets up



to and including CB6. This was broadly consistent with the scenarios. The pathway was “designed only to provide an indicative basis on which to make policy and plan to deliver on our whole-economy emissions targets”:-

“The exact path we take is likely to differ and must respond flexibly to changes that arise over time.” (p.74)

77. The delivery pathway was based upon the Department’s understanding of each sector’s potential to reduce emissions up to 2037 (p.74). The pathway prioritised emission reductions where known technologies and solutions exist and minimised the use of GHG “removals” to meet the targets (p.75). The claimants criticise the use of the expression “theoretical potential” in one part of the NZS. But I see nothing objectionable in that. Inevitably, the making of national policy on climate change depends upon modelling future circumstances. That involves a number of judgmental assumptions, variables, interactions and uncertainty. It is not a matter of simply making empirical measurements.

78. The NZS distributes the indicative delivery pathway between sectors (figure 13, p.77). The Strategy explains (para. 20 on p.77):-

“Broken down by sector, our indicative delivery pathway *implies* the reduction in emissions up to 2037. These indicative sector pathways, presented as ranges for residual emissions to reflect the inherent uncertainty, help to drive change and *to plan how we can remain on track to meet our targets*. Given the interdependencies and interactions within and between sectors, the exact areas for emissions savings may shift, as our understanding increases. *These pathways are therefore not predictions* or targets: the emissions savings ultimately contributed by each sector are likely to differ as we respond to real-world changes.” (emphasis added)

79. The NZS summarises key requirements for each sector assumed in the work on the delivery pathway, together with a level of reduction by 2035 from UK emissions in 1990 (pp. 78-79). So for the power sector, all electricity will need to come from low-carbon sources by 2035 (subject to security of supply) whilst meeting a 40-60% increase in demand. Based on the technology assumed, it is expected that GHG emissions from the power sector “could fall” by 80-85% by 2035 (pp.78 and 96).

80. The NZS explains at p.82 that meeting the increased demand for low carbon energy relies upon significant scaling-up of *inter alia* new green technologies. The Strategy then sets out the capacities which low carbon electricity generation, hydrogen production, carbon capture and biomass will need to reach over the next 15 years (p.82). Figure 15 (p.83) gives an overview of “the scale and pace” of some of the changes required, according to assumptions used in the pathway (pp.82-3). The Strategy recognises that “new innovations may emerge, enabling the market to move more quickly or at lower cost than expected, while in other areas progress may be hindered by unexpected deployment challenges as technologies are brought to scale.” Accordingly, the document puts forward a pathway “which maintains flexibility in the future, while ensuring we do not delay action we know is needed in the near-term” (p.84).

81. The NZS refers to the “critical activities” driving decarbonisation across the economy in figure 16 (p.87). This focuses on the new technologies which need to be developed and deployed over the next decade. Figure 16 identifies the year in which milestones are expected to occur and the periods over which activities are expected to start and finish. The NZS states that policies and proposals for achieving these activities are presented in subsequent chapters.
82. Chapter 3 sets out policies and proposals for seven different sectors: -
- Power
  - Fuel supply and hydrogen
  - Industry
  - Heat and buildings
  - Transport
  - Natural resources, waste and fluorinated gases
  - Greenhouse gas removals.

The NZS states (at p.253) that:

“Sector chapters set out policies and proposals in line with this indicative pathway to ensure we are on track for net zero. While it is impossible to predict every path to net zero, this pathway sets out the decisive action we know is needed and acts as the best plan we have to measure progress against.”

83. The NZS adopts the same structure for each sector. I take as an example the first section of chapter 3, dealing with “power”. The NZS first summarises progress made to date (paras. 1-3). It then summarises how the sector needs to change so as to contribute to the net zero target. Using “whole system modelling” to 2050, the strategy quantifies by how much emissions in this sector “could need to drop” by 2050 and then states by how much emissions “could fall” by 2030 and by 2035 (paras. 4-6 on p.96). Figure 17 shows for the power sector an indicative pathway to 2035 and a “range” for the position in 2050. The diagram enables a comparison to be made between two projections: first, the delivery pathway and second, a projection taking into account policies *before* the NZS and Energy White Paper (see [91] below).
84. Paragraphs 7 to 21 describe the challenges and opportunities in the power sector. Electricity generation must be further decarbonised whilst at the same time increasing supply substantially to meet demand in other sectors e.g. from increased electrification. The trajectory or delivery pathway for CB6 suggests that low carbon technologies will need to be built “at, or close to, their maximum technical limit”, which is “a considerable delivery challenge” (paras. 11-12). Unabated gas generation currently plays a critical role in maintaining a secure and stable electrical system, but will be used less frequently in the future, running only when most needed for security of supply. Low carbon technologies capable of replicating that role are to be brought forward,

such as CCUS, and hydrogen-fired generation. There will also be measures to ensure that any new combustion power stations, including gas, can be converted to clean alternatives in the future. The NZS also summarises the public and private investment that will be required: £280 to £400 billion on electricity generation, of which £150 to £270 billion relates to CB6, and £20 to £30 billion on transmission and distribution networks by 2037 (para.18).

85. Paragraphs 22 to 43 on pp. 100-105 of the NZS describe the policies and proposals for the power sector to address the needs and opportunities previously identified. This needs to be read together with the milestones and activities shown in figure 16. Some of the matters discussed, such as CCUS and hydrogen generation, also feature in the subsequent treatment of other sectors.
86. The NZS applies the same approach to other sectors in turn. Inevitably, the level of detail and certainty varies, for example, in relation to technologies yet to be developed.
87. Chapter 4 sets out “cross-cutting” policies and proposals which affect more than one sector, or the economy as a whole. They include Government-funded programmes for research and innovation, public funding and private investment (including leveraged investment) in green finance, labour supply with skills for net zero schemes, net zero in government decision-making and regulation, and international collaboration (e.g. through COP26, G7 and G20).
88. The Technical Annex of the NZS is set out at pp. 306-359.
89. At [8] above I referred to the use of the GWP of GHGs other than CO<sub>2</sub> to express the emissions of those gases as a CO<sub>2</sub> equivalent for setting and monitoring compliance with carbon budgets and the 2050 target. The UK follows international conventions set by the Intergovernmental Panel on Climate Change (“IPCC”) (see NZS at pp. 308-9). At the time the NZS was issued it had been agreed internationally that the reporting of GHG emissions under the Paris Agreement would use 100-year GWPs in the IPCC’s Fifth Assessment Report (“AR5”). But that report published two sets of values for 100-year GWPs, one with “climate carbon feedbacks”, reflecting more indirect effects of GHG on the climate and the other without. The “with feedback” GWPs give higher values for GHG emissions. In October 2021 no decision had yet been taken on which GWPs should be used and so the pathways in the NZS were based on the higher, more conservative GWPs “with feedback”. The NZS states at p.309: -

“The use of AR5 GWPs without feedback results in a lower CO<sub>2</sub>-equivalent value for UK GHG emissions compared to AR5 GWPs with feedback, meaning that less abatement would be required to meet the same carbon budget. As a result, it may appear that the policies and proposals in this strategy overachieve on our carbon budgets when based on AR5 GWPs without feedback. *However, these provide additional headroom with which the Government could seek to manage uncertainty in emissions projections. We would review the cost effectiveness of maintaining this headroom as the necessary policies and proposals are implemented.*” (emphasis added)

It will be noted that this headroom was to be “maintained” until a future “review” during the implementation of the polices and proposals in the NZS. I return to this subject under ground 1.

90. The Technical Annex to the NZS deals with “meeting the carbon budgets” at pp. 321-327.
91. The baselines for the indicative delivery pathways in the NZS took into account policies implemented, adopted or planned as at August 2019, so that the additional emissions reductions required to meet the carbon budgets could be identified (NZS p.311 para.25 and James WS para. 38). BEIS’s EEP 2019 projections were adjusted for a range of changes which had occurred, such as GDP projections, the GWPs in AR5, technological improvements and more recent projections from other government departments and agencies (pp 312-3).
92. The NZS says (para. 43 on p.321) that the section between pages 321-327 shows *inter alia* the “future performance implied by the delivery pathway” together with some deployment assumptions that illustrate some of the real-world changes required to meet carbon budgets.”
93. Table 6 (p.321) shows projections of UK emissions “implied” by the delivery pathway:

	CB3	CB4	CB5	CB6 (incl. IAS) <sup>2</sup>
Years covered	2018-2022	2023-2027	2028-2032	2033-2037
Baseline	2,499	2,052	1,889	2,029
Budget limit	2,544	1,950	1,725	965
NZS emissions pathway	2,499	1,854	1,312	962
Performance against carbon budget	-45	-96	-413	-3

The figures are given in Mt CO<sub>2e</sub>. The figure of 962 Mt CO<sub>2e</sub> for CB6 is 3 Mt CO<sub>2e</sub> less than the budgetary limit set for that period.

94. Table 7 of the Technical Annex shows the indicative *range* of the UK’s carbon account for each of the 5 years of CB6. The same figures were subsequently published in

<sup>2</sup> “IAS” refers to international aviation and shipping

December 2021 as the Secretary of State's report under s.12 of the CCA 2008. The implied performance of the delivery pathway for CB6 (962 Mt CO<sub>2</sub>e shown in Table 6) corresponds to the "central estimate" given in table 7. Table 7 also shows the upper and lower estimates which are said "to represent the best evidence of the uncertainty in the projections for the sixth carbon budget period" (para.45). The range is quite wide. The upper projection is 1217 Mt CO<sub>2</sub>e and the lower 763 Mt CO<sub>2</sub>e. The NZS acknowledges that "the [delivery] pathway is highly ambitious". Downside risks to estimated policy savings include, for example, delays to delivery (para.47 p.322).

95. Table 8 of the Technical Annex (p.323), like tables 6 and 7, is taken from the modelling for the delivery pathway. The implied performance of the pathway is shown as UK emissions by sector for CB4, 2030 (the NDC year), and CB6. The CB estimates are annual figures averaged over the 5 years of the relevant budgetary period. The estimates are given using AR5 GWPs "with feedback", the basis selected for the NZS. The annual figure for total emissions in CB6 is 192 Mt CO<sub>2</sub>e which (allowing for rounding) equates to the 5 year figure of 962 Mt CO<sub>2</sub>e in table 6.
96. Table 9 of the Technical Annex (p.324) is comparable to table 8 but uses instead the "without feedback" GWPs in AR5. Here the annual figure for total emissions in CB6 reduces to 182 Mt CO<sub>2</sub>e, or 910 Mt CO<sub>2</sub>e over the 5 year budgetary period. By comparing tables 8 and 9 it appears that the use of the higher "with feedback" GWPs increases the projected emissions by about 52 Mt CO<sub>2</sub>e<sup>3</sup> for the whole 5 year period of CB6.
97. Paragraph 52 of the Technical Annex explains that table 10 shows some of the "real world deployment assumptions" for each sector underpinning the pathway analysis. "Not all of the policies and proposals underlying the delivery pathway are represented by [the assumptions shown in table 10]." Ranges are given, for example, where values differ between the electrification and hydrogen scenarios. The NZS acknowledges that some of the deployment assumptions are early "assessments" based on "maximum technical potential". Because of ongoing uncertainties, the policy mix that will meet carbon budgets, and related deployment assumptions, are subject to change. In that sense table 10 is said to be "illustrative".
98. The figures in tables 6-8 of the Technical Annex were a puzzling feature during the hearing because they appeared to imply that the defendant had produced projections showing that the *quantified* effects of his proposals and policies would enable CB6 to be met. If so, ground 1(i) of the challenge simply would not arise on the facts. But Mr Honey accepted that that was not the case.
99. The explanation in the NZS of those tables and the delivery pathways is far from clear. It certainly did not explain the basis upon which the defendant decided to approve the NZS. It was therefore necessary for Ms James to explain in her witness statement the work carried out in preparing the NZS and why it was approved by the Minister. However, that evidence was also unclear on certain important points. Ultimately those

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<sup>3</sup> However, para. 51 on p.323 of the NZS states that the exercise in table 9 has been carried out on an assumption that it would be "optimal in cost and non-cost terms to implement the same set of policies and proposals modelled in the AR5 with feedback pathways".

matters were clarified at the hearing on 15 July 2022 by reference to the evidence already before the court.

### **The defendant's evidence on the process leading to the Net Zero Strategy**

100. Ms. James and her team worked on developing the proposals, policies and supporting analysis from early 2020 until publication in October 2021. They were assisted by a team of analysts responsible for modelling and analysis of pathways, proposals and policies (WS para. 24). The pathways and scenarios were developed in close collaboration with sector teams across Government (WS para. 29).
101. The team used previous s.14 reports as examples of what such a report should contain: the UK Low Carbon Transition Plan (2009) covering CB1 to CB3, The Carbon Plan: Delivering our low carbon future (2011), covering also CB4, and The Clean Growth Strategy (2017) covering also CB5 (WS para. 25). The NZS was also to address the 2030 NDC and the 2050 target.
102. The NZS built upon a number of recent, sectoral decarbonisation plans, including the Energy White Paper, the Transport Decarbonisation Plan and the Industrial Decarbonisation Strategy, but did not duplicate their level of detail, instead leaving them to be read as complementary documents. (WS paras. 26-27 and 65). Many of the policies had been developed by other Government departments and so their officials worked closely with BEIS between November 2020 and October 2021 on the development of measures for the NZS and on analysing their effects to enable the 2037 pathway to be met (WS paras. 65-69).
103. During the spring and summer of 2021 BEIS Ministers worked with Ministers across Government to reinforce this process. Over the same period BEIS Ministers met regularly with Ms. James and her team to review successive drafts of the NZS. The Secretary of State held monthly sessions to direct the development of policies for the Strategy, including the package of measures for each individual chapter. Officials also collaborated with the devolved administrations to identify and include their emissions reduction proposals and policies in the NZS (WS paras. 70-72).
104. The three 2050 scenarios presented in Chapter 2 of the NZS were developed and refined between March and September 2021. They were used to explore different ways in which CB6 and 2050 targets could be met (WS para. 32-33). The design of the scenarios was influenced by key strategic policy decisions and technological dependencies provided by the cross-Government sector teams and then brought together so as to be compatible with net zero (WS para. 34). An iterative process was carried out involving about 200 modelling runs. This said to have produced coherent *scenarios* to match the carbon budgets (WS para. 35).
105. Ms James and her team drew several “key insights” from that work (WS para. 36), which they used to prepare and model a delivery pathway to meet emission targets up to 2037 (WS para. 37).
106. The delivery pathway was developed in stages. In March and April 2021, BEIS gathered “initial evidence” from the sector teams across Government on how much each sector could decarbonise by 2037. The analysts combined this material with evidence from the CCC’s advice on CB6, the Department’s model and further

modelling work by cross-Government sector analysts showing how emissions reductions could be pushed further and where. This resulted in the production of an “initial pathway”, which served as a basis for developing proposals and policies, including the scale of the emissions reductions needing to be found in each sector (WS paras. 39-40).

107. The modelling for the delivery pathway was developed with the input and collaboration of policy officials and analysts from several Government Departments. BEIS also discussed with the Department’s group of external experts the insights drawn from the work on the 2050 scenarios, the “systems” approach and the testing of policy proposals (WS paras. 41 and 74-76).

108. Ms. James explained the “multifaceted and complex” relationship between the 2037 delivery pathway and the NZS proposals and policies (WS paras. 45, 63-72 and 123). In summary she said:-

- (i) The 2037 delivery pathway represented the analysts’ assessment of how each sector could best decarbonise in a feasible, credible and cost-effective way (see also [76]-[81] above);
- (ii) Early versions of the pathway were used as a benchmark for driving the development of proposals and policies across Government from April 2021 through to October 2021;
- (iii) Once a draft package of NZS proposals and policies had been developed by September 2021, Ms James’s team and the analysts “assessed them against a final version of the 2037 pathway derived from updated sectoral modelling (including of (sic) the proposed proposals and policies” to determine whether the Department could be confident that the NZS would enable the carbon budgets to be met (see WS paras.45c and 123-125); and
- (iv) The 2037 pathway presents a clear set of trajectories for UK climate change targets against which the Department will monitor performance of proposals and policies over the budgetary periods.

109. Mr Honey explained that in addition to the modelling work carried out in order to develop the delivery pathway, officials also carried out modelling specifically to quantify the predicted effects of the proposals and policies being prepared for the NZS, in so far as those measures were quantifiable.

110. On quantitative prediction of policy effects, Ms James explains at WS para. 59 that the NZS contains two broad categories of proposals and policies: -

- (i) Sectoral proposals and policies which will deliver *direct* emissions reductions in particular economic sectors, set out in chapter 3 of the Strategy; and
- (ii) Enabling proposals and policies, most of which do not deliver direct emissions savings, but are designed to support transition across the economy.

Category (ii) is divided into two subsets. The first comprises “cross-cutting” measures which apply to all or multiple sectors and meet several policy objectives. They are all set out in chapter 4 of the NZS. The second are “sectoral enabling” measures which enable the decarbonisation of a specific sector. Most of these are set out in chapter 3 (WS paras. 59 and 61-62).

111. The quantification was largely done through the use of sectoral models and evidence bases, by which estimates were produced of emissions reductions resulting from policy measures. There is a direct relationship between sectoral proposals and policies and the activities which they incentivise or regulate. Many of the measures in the NZS were expressed in terms of the actions or deployment they would deliver, and so these could be directly quantified (WS para. 83).
112. However, cross-cutting measures are less directly linked to emissions reductions. They enable sectoral measures to achieve such reductions, but more often than not they do not themselves have a direct effect (WS para. 84). Some cross-cutting measures considered necessary for the delivery of quantified emission reductions from sectoral measures were indirectly accounted for through that sectoral quantification. The effects of other cross-cutting measures could not be quantified (WS paras. 85 and 86). The fact that some quantifiable measures may be developed over time makes it inherently difficult to quantify reductions from such a proposal “with certainty”. (WS para. 88).
113. As a result Ms. James and her team judged that it would be appropriate for the Strategy to rely upon “a mix of quantified proposals and policies, which delivered a very substantial portion of the required emission reductions, combined with some emerging proposals and policies which were at earlier stages of development”, especially as the budgetary period for CB6 was some 12-16 years away (WS para. 89). A similar approach had been taken for the Clean Growth Strategy in 2017, where quantified measures were projected to deliver 94% of required emissions reductions for CB4 and 93% for CB5 (WS para. 91).
114. The analysts in BEIS produced a dataset comprising the figures and analysis which underpinned (a) the NZS delivery pathway to 2037 and (b) “all quantified proposals and policies in the emerging draft NZS”. The dataset included inputs from sector analysts and policy leads across Government. Ms. James’s team also collected data on “the time-scales over which NZS proposals and policies would be delivered and take effect” for inclusion in the dataset (WS paras. 77-78).
115. In para. 79 of her witness statement Ms James explains that the dataset contained the following quantitative metrics:-
- “a. annual emission reductions in CO<sub>2</sub>e against each quantified policy or proposal, split between both traded and non-traded sectors, with further breakdowns for particular constituent gases (methane and nitrous oxide), with totals expressed in both with and without feedback GWP values (as described in paragraphs 48-55 above);
  - b. a mapping of the emissions reductions from each quantified proposal and policy to the particular emissions pathways included in the NZS (such as the electrification scenario or the



high hydrogen scenario), to reflect that some proposals and policies would contribute different emissions reductions under different scenarios;

c. assumptions about potential contributions to UK totals through policy delivery outside of England (including through policy taken by the Scottish Government, Welsh Government and Northern Ireland Executive) for policies or proposals that the UK Government could not otherwise quantify for Scotland, Wales, or Northern Ireland, generally based on UK Government or CCC estimates of technical potential; and

d. totals of emission reductions by sector derived from the underlying data, expressed as an average or per annum figure for each carbon budget period and for our NDC, and conducted for both global warming potentials (AR5 with and without feedback).”

116. In para. 80 she describes the detailed qualitative data in the dataset:-

“The dataset also included detailed qualitative data on the characteristics of proposals and policies, such as the mechanisms by which they would achieve their intended outcomes (e.g. funding incentives, regulations, tax incentives, engagement with the public or businesses); which sector(s) of the economy they would affect; which central Government department would be responsible for delivering them; and whether they required joint working with local authorities to be delivered.”

117. This dataset enabled officials in BEIS to assess the pathways, proposals and policies in the NZS so that they could advise Ministers that the Strategy would enable the carbon budgets to be met (WS para. 81).

118. The modelling to quantify emissions reductions from those proposals and policies which were quantifiable was updated to take into account more recent decisions approving policy and the spending review. As a result officials produced quantitative estimates that the emissions reductions expected from quantifiable proposals and policies would deliver about 95% of the reduction required by CB6. They then compared this estimate to the modelling of the performance of the delivery pathway (see [93]-[95] above). They concluded that the quantified emissions reductions from the proposals and policies were “not materially different from”, or were “consistent with”, the modelling for the pathway. Those emissions reductions were within the margins of uncertainty identified for the pathway estimates (WS paras. 123-125 and table 7 of the Technical Annex: see [94] above).

119. This comparison exercise formed one important part of the briefing given to the Minister on 15 October 2021 and thus the basis of his decision (see [131]-[132] below). Mr Honey confirmed this to be the case at the hearing on 15 July 2022.

120. The final decision to approve the NZS had to be taken by the Minister of State on behalf of the Secretary of State. The Minister had been appointed on 16 September

2021, only a month before the publication of the NZS. COP26 began on 31 October 2021. Plainly, as Mr. Honey acknowledged, Ministers and officials had to work under a great deal of pressure in the run up to the publication of the Strategy.

121. The Minister was provided with an initial briefing pack on his new responsibilities, the CCA 2008 and the NZS. He was given a more detailed verbal briefing on 22 September 2021. The target publication date was 19 October 2021, timed to coincide with the Global Investment Summit. There were ongoing processes for clearing the proposals and policies in the NZS with No.10, the Cabinet Office, HM Treasury and responsible Ministers in other departments. Some measures were subject to the public spending review, which took place during the summer and autumn of 2021 (WS paras. 102-105).
122. On 29 September 2021 officials submitted to the Secretary of State and the Minister a briefing package for the clearance of policies remaining to be considered by other Ministers, but which did not involve significant policy changes or the spending review. The Minister approved the package on 1 October and the Secretary of State on 5 October 2021. This clearance process was completed before the Minister was given further briefing for his approval of the NZS for publication (WS paras. 113-116).
123. Ms. James describes the complex and intense process relating to clearance of other policies. This involved daily meetings between 4 and 18 October 2021 and advice on certain matters being given to the Prime Minister and the Chancellor of the Exchequer. Some textual changes were being made until shortly before publication to ensure consistency with confirmed policy positions. The Minister was kept abreast of developments (WS paras. 118-122).
124. In the evening of Friday 15 October 2021 officials provided the Minister with their advice to enable him to consider approving the publication of the NZS. He was provided with a “near final” draft of the Strategy. The Minister was advised that his approval was required by 10am on 18 October if the document were to be published the following day.
125. Paragraph 8 of the submission to the Minister stated: -

“Drawing from net zero scenarios in 2050, the Net Zero Strategy presents a modelled indicative pathway to CB6, broken down by sector based on their potential to decarbonise. While the exact areas for emissions savings may shift in response to real-world changes and as our understanding increases – we use ranges for each sector to reflect this uncertainty – the pathway provides a sound basis on which to plan how we meet our emissions targets. The indicative pathways are supported by specific policies and proposals. If delivered in full, the specific policies and proposals outlined in Annex C are projected to overachieve CB4 by 11Mt p.a. and CB5 by 72Mt p.a. We need to aim to overachieve on CB4 and 5 in order to stay on track for our NDC and CB6 (which were set after we increased our ambition to meet net zero by 2050). They are also projected to achieve our 2030 NDC. The strategy provides a strong foundation for decarbonising in the 2030s, *with the stated policies and proposals projected to*

*directly deliver ~95% of emissions reductions required for CB6.” (emphasis added)*

126. Paragraph 8 referred to Annex C, a 42-page list of a great many policies. The list merely told the Minister whether an individual policy had been “quantified” (because it had a direct effect on emissions) or remained “unquantified”. If the effect of a policy on emissions had been quantified, that effect had been taken into account in the quantitative assessment of the extent to which policies in the NZS were expected to meet the limits in CB4, CB5 and CB6. However, Annex C did not give any indication to the Minister about the scale of any reduction attributable to any specific policy, or even any group of interacting policies, although the information was available to officials. I return to this point under ground 1(ii).
127. Paragraph 8 also stated that the quantified policies were projected to deliver 95% of the emissions reductions required to meet the budget of 965 Mt CO<sub>2</sub>e set for CB6. However, no breakdown of that figure of any kind was provided.
128. The briefing to the Minister also included the following table: -

Residual emissions, Mt CO <sub>2</sub> e/year	Mid 2020s	Late 2020s and Early 2030s		Mid 2030s
	CB4	CB5	NDC	CB6 (incl. IAS)
Emissions after savings (with SR estimates)	379	273		202
Budget	390	345	275	193
Position Against Budget				
... including indicative SR impact	-11	-72	-2	9
... including further capability (from NZS pathways)	-19	-83	-13	-1

“SR” referred to the spending review.

129. The only explanation in the ministerial submission of that table is contained in para. 10: -

“Although our ambitious SR bid for NZS policies did not result in all the funding requested, we advise that the NZS package of policies and proposals credibly enables us to be on track for all our legislated carbon budgets, and therefore fulfils our duty under sections 13 and 14 of the CCA (see Annex F). This is based on current modelling and planned policy work to identify further options over the coming years to deliver CB6 in full, taking advantage of technological progress, innovation and societal trends. It is not necessary for the policies and proposals included on the face of the NZS to deliver 100% of the emissions reductions required for CB6, providing they are sufficient to keep the targets in reach and that we continue to develop further policies and proposals as required in coming years (see paras. 15 and 16, and Annex F, for legal risks associated with this position). It is also worth noting that the Strategy uses conservative assumptions on Global Warming Potentials which will be reviewed in 2022, taking into account any relevant outcomes from COP26 which are likely to improve our performance on our carbon budgets.”

130. The table in [128] gives annual figures. The first line estimates annual emissions during CB6 of 202 Mt CO<sub>2</sub>e, which is 5% short of the annual level required to meet CB6, 193 Mt CO<sub>2</sub>e in the second line. That first line takes into account emissions reductions from NZS policies, but only those with quantifiable effects (WS para. 141). The annual shortfall is expressed as 9 Mt CO<sub>2</sub>e in the fourth line. The fifth line, “including further capability (from NZS pathways)”, shows an annual figure of -1 Mt CO<sub>2</sub>e. The reference to NZS pathways is solely to the modelling work carried out on the delivery pathway (WS para. 142). At the hearing there was no dispute that this modelling represents the “implied performance” of the delivery pathway for CB6, resulting in annual emissions of 192 Mt CO<sub>2</sub>e (shown in table 8 of the Technical Annex) compared to the annual figure required for that budgetary period of 193 Mt CO<sub>2</sub>e (set out in table 1 and effectively also in tables 6-8). In other words, it indicated that the delivery pathway was projected to satisfy CB6. But that raised the question what did the modelling of the “delivery pathway” take into account?
131. The advice given in para. 10 of the ministerial submission was that the NZS package of proposals and policies credibly enables the UK to be on track for all the carbon budgets which have been set based on (a) current modelling and (b) “*planned policy work* to identify *further options* over the coming years to deliver 100% of the emissions reductions required for CB6”. On 15 July 2022 Mr Honey accepted that this was a reference to the same kind of comparison as had been described by Ms James (WS paras. 123-125 and see [118] above) between the modelling of the effects of those NZS policies which were quantifiable (delivering 95% of the reductions required to satisfy CB6) and the estimates of the “implied performance” of the delivery pathway. But here it will be noted that the briefing referred to an additional factor in that comparison, the “planned policy work”.
132. A straightforward description of the advice given in the briefing would have been (a) the quantitative estimates of the emissions reductions from policies with quantifiable effects would deliver 95% of the reduction required by CB6 and (b) as a matter of

judgment, the unspecified policies referred to in para. 10 of the ministerial submission would enable that quantitative shortfall and the target in CB6 to be met. During the hearing the judgment in (b) was referred to as a “qualitative” judgment or analysis, as distinct from quantitative analysis. I will use the same terminology.

133. The defendant’s skeleton did not set out this position at all clearly. Paragraphs 69-70 stated that the delivery pathway was not “merely modelling” of what it would be feasible to achieve (cf. para. 26 of the claimants’ skeleton). Instead, as proposals and policies were developed the pathway reflected the expected impact of those measures: “they were fed back (sic) into the delivery pathway.” Indeed, paragraph 70 tried to have it both ways:

“The proposals and policies fed into the pathway, and were also assessed to be consistent with the emissions savings required by the pathway.”

134. Because of the lack of transparency on this subject, both in the defendant’s case and in the NZS, much time was spent trying to find out whether the modelled results of the delivery pathway for CB6 in tables 6-8 of the NZS, or the figure of -1 Mt CO<sub>2e</sub> in the table given to the Minister, represented a freestanding quantification of emissions reductions resulting from NZS policies or whether the quantification of all emissions reductions resulting from the “quantifiable” policies (“the 95%”) was input into the modelling for the delivery pathway. At the hearing on 15 July 2022, Mr Honey said that the evidence before the court did *not* indicate that either exercise had been carried out. If it had, that assessment would have been of a very different kind to that described, for example, at p.17 of the NZS (see [69] above) and the defendant would no doubt have said so in clear terms both in the NZS and in the evidence.

135. Instead, Mr Honey confirmed that the defendant’s case rested on the comparison described in [118] and [132] above between the quantitative analysis that policies would deliver 95% of the emissions reductions required by CB6 and the estimate for the delivery pathway of 192 Mt CO<sub>2e</sub> of annual GHG emissions during CB6, together with the exercise of judgment to conclude that the policies in the NZS will enable that carbon budget to be met.

136. It follows, and Mr Honey also confirmed, that the modelling on the delivery pathway did not include or provide any quantification of the effects of the “planned policy work” referred to in paragraph 10 of the ministerial submission. This, of course, is relevant to the issue under ground 1(i) of whether the defendant could lawfully have been satisfied that the NZS would enable CB6 to be met in accordance with s.13(1) of the CCA 2008.

137. The claimants criticised the statement in para. 10 of the ministerial submission (see [129] above) that the policies and proposals did not need to deliver 100% of the emissions reductions required for CB6 “providing that they are sufficient to keep the targets in reach and that we continue to develop further policies and proposals as required in coming years...”. The claimants suggested that the Minister could not have been satisfied in accordance with s.13 of the CCA 2008 that the proposals and policies would enable the emission reductions required by CB6 to be met. In my view that statement was simply referring to the quantifiable policies which were predicted to achieve 95% of the CB6 requirement. The officials judged that other policies would

meet the shortfall and accordingly the shortfall was “in reach”. Again the real question is whether the defendant erred in his interpretation of s.13 (see ground 1(i)).

138. I have to say that the defendant’s position could and should have been explained in a clear and straightforward manner both in the evidence and in the skeleton. The court is entitled to such an explanation, particularly in a case of this nature (see [192] below). It would have saved a good deal of court time and resource.
139. One important point to emerge from all this, as the claimants rightly submitted, is that the first time that the Government revealed that it expected its quantified proposals and policies to achieve only 95% of the emissions reductions required to meet CB6 was when the defendant served his Summary Grounds of Defence in response to these challenges (see paras. 31-35). Neither Parliament nor the public would have been aware of the point from the NZS, nor indeed of the way in which the defendant relied upon further “planned policy work” to be satisfied that the NZS would enable CB6 to be met.
140. In the absence of any explanation in the ministerial submission about which policies would or could be the subject of further work, Mr. Wolfe QC, on behalf of Friends of the Earth Limited, submitted that officials were referring to proposals and policies not referred to in the NZS at all and therefore irrelevant to satisfying the duty in s. 13. He based himself upon the penultimate sentence of para. 10 of the submission.
141. However, the court has to keep in mind that it is not construing a legal instrument, but seeking to understand advice given to a minister who had previously been briefed on the subject (WS para. 102). Furthermore, in this instance, the advice was given under great pressure. In judicial review the court does not award marks for draftsmanship, or use infelicities of expression as a basis for inferring unlawfulness. Instead, it looks at the substance of the matter. Read in the context of the material provided to the Minister and his earlier briefing, the sentence criticised was simply referring to the “95% estimate” in relation to quantifiable policies and to the judgmental comparison with the modelling work on the delivery pathway and its margins of uncertainty ([118] above).
142. It is also relevant that the advice in para. 10 was given in the context of a high level strategy and set out the position at a particular point in time in relation to a wide range of policies. Some policies were more detailed or specific than others because, for example, they had previously been adopted and were in the process of being, or about to be, implemented. Other policies were in the course of development or intended for development in a few years’ time. In this context “planned policy work” should be understood to indicate policies and proposals referred to in the NZS which are to be developed in future, or developed further, and not to matters which were not mentioned in the NZS at all.
143. The unquantifiable cross-cutting measures identified in chapter 4 represent one obvious category of proposals in the NZS intended to produce additional substantial reductions in emissions. The importance of those measures for meeting the carbon budgets was emphasised in para. 12 of the ministerial submission.
144. Ms James says that para. 10 of the ministerial submission referred to the further development of some policies which had not been quantified in the modelling work and other policies which had (WS para. 142). Ms. James has given a number of examples of those measures (WS para 143). For example, it is proposed that substantial public

investment be made in research and development and in green finance in order to stimulate and promote “further options”. Subsequent s.14 documents can be expected to include more details on such matters as they are developed.

145. Accordingly, I do not accept Mr. Wolfe’s submission that paras. 142 and 143 of Ms. James’s witness statement sought to put an impermissible gloss on para. 10 of the submission to the Minister. That advice, read fairly and in context, referred to unquantified proposals and policies in the NZS of the kind identified by Ms. James and to quantified proposals and policies in the NZS which may be developed further.

146. The final version of the NZS was approved by the Minister on 17 October 2021. On 27 October 2021 he was given further advice that subsequent editing changes and decisions on the spending review had not materially altered the NZS or the predicted emissions savings for the carbon budgets. No point is taken on those aspects.

### **The assessment of the Net Zero Strategy by the Committee on Climate Change**

147. The CCC produced its “Independent Assessment” of the NZS one week after its publication, on 26 October 2021.

148. The CCC was positive about a good deal of the NZS. The Strategy followed the approach it had recommended in relation to the analysis and modelling of scenarios and the use of an indicative delivery pathway.

149. On p. 3 the CCC said: -

“Our overall assessment is that it is an ambitious and comprehensive strategy that marks a significant step forward for UK climate policy, setting a globally leading benchmark to take to COP26. Further steps will need to follow quickly to implement the policies and proposals mapped out in the Net Zero Strategy if it is to be a success.

We welcome the Government’s recognition that reaching Net Zero and tackling climate change is not only achievable and affordable but essential to the UK’s long-term prosperity and can bring wider benefits for society, the economy and the environment.

The pathways for emissions and technologies, and the associated investment, outlined in the Strategy are broadly aligned to those set out by the Climate Change Committee in its advice on the Sixth Carbon Budget. They are accompanied by proposals for credible delivery mechanisms across the economy.

The targets cover all the UK’s territorial emissions, including international aviation and shipping, and the plans aim to deliver the targets fully in the UK, without recourse to international carbon credits, while avoiding carbon leakage from industry or agriculture. The strategy as a whole is based on cautious

assumptions over the lasting impacts of the Covid-19 pandemic and rules for emissions accounting.

The Net Zero Strategy, with its many supporting publications, is an example of a deliverable sector-based strategy for rapid emissions reductions. Following three decades of sustained emissions reduction in the UK, the Strategy sets the path for future decarbonisation consistent with targets for both the near term and the long term that meet the demands of the Paris Agreement.”

150. In the view of the CCC “the Net Zero Strategy fulfils the requirement in the Act for the Government to present policies and proposals to meet the UK’s emission targets” (p.7).

151. Mr. Honey also points to the following statement at p.11 of the Assessment:-

“The overall and sectoral ambitions that the Government has proposed align well to those proposed by the Committee in its advice on the Sixth Carbon Budget (figures 1 and 2). The ranges identified by the Government are intended to reflect uncertainty around a central delivery path that aims to keep in play multiple possible scenarios for meeting the Net Zero target in 2050. This is a sensible approach in the face of uncertainty and aligns to the Committee’s approach in its advice”.

But the CCC went on to point out the Government’s range is “somewhat asymmetric: overall emissions will have to be in the lower half of these ranges to deliver CB6”.

152. In its “conclusion on proposals for policies to deliver the plans” the CCC said at p.27: -

“Together, the proposals represent a strong foundation for policy to reduce emissions across the economy. In most areas, the Government has set goals aligned to the path to Net Zero and put forward credible policy packages to deliver them. Funding and incentives appear to be being set at around the level required and generally plans involve a balanced mix of the possible solutions.  
.....

*However, the Government has not quantified the effect of each policy and proposal on emissions. So while the Government has proposed a set of ambitions that align well to the emissions targets, it is not clear how the mix of policies will deliver on those ambitions – albeit in theory they could. This makes it hard to assess the risks attached to the plans and how best to manage these. The Committee will return to these questions in the coming months, and we encourage the Government to increase the transparency of how the policies will support the plans.”*  
(emphasis added)



153. On 11 April 2022 Friends of the Earth wrote to the Chief Executive of the CCC to ask the following questions: -

“1. Do you have any comment on the fact that the NZS does not provide information on the predicted GHG reductions and time-scales for the policies and proposals it describes?

2. Does that impact on the CCC’s ability to comment on the NZS including on whether it will secure compliance with carbon budgets and Net Zero?

3. In relation to those matters, has the CCC a) raised concerns about this with the Government and/or b) asked the Government for any further information?

4. Has the CCC been provided with any further information on those matters, either in response to its request or in any event?”

154. The Chief Executive responded on 22 April 2022: -

“As you will be aware, the Climate Change Committee published an interim assessment of the UK Government’s Net Zero Strategy in October 2021. We will shortly publish a more detailed assessment of the strategy, in June, as part of our annual statutory report to Parliament.

As we stated in October, the Government has not quantified the effect of each policy and proposal on emissions. This makes it hard to assess the risks attached to the plans and how best to manage these. That remains our view.

We are now in the final stages of completing a new assessment for our annual Progress Report. It will contain new analysis of the Net Zero Strategy and a more complete commentary on its likely impacts.

As part of this assessment, we are in regular dialogue with BEIS to understand the Government’s strategy in more detail. So far, we have been provided with some limited clarifications and further breakdowns of the pathway that was published in the Net Zero Strategy. *We have not received any new quantification of emissions savings from specific policies.* These discussions continue and the information we have received is not complete. We expect to receive some further clarification on the emissions pathway in response to our ongoing queries.

It is difficult to provide a fuller response at this point, until we have completed our analysis.”

The claimants emphasised the words I have italicised. The CCC’s report to Parliament in June 2022 had not been published by the time of hearing, so it was not referred to by

the parties and I have not had regard to it. No party has suggested that it affects the issues that the court has to decide.

## **Ground 1**

155. Some of the submissions made by the parties were wide-ranging, but I will only address those issues which I consider need to be resolved for the determination of these claims for judicial review.

### *Preliminary issues*

156. It is convenient to clear the decks before coming to the issues of real substance under ground 1.

157. One of the main issues which the court has been asked to determine (ground 1(i)) is whether the Secretary of State must be satisfied under s.13(1) that the numerical projections of his quantifiable policies will enable at least 100% of the reductions in emissions required by CB6 to be achieved. The defendant submits that the issue is academic, alternatively relief should be refused, because it was decided at COP26 to adopt the less conservative GWP values rather than the more conservative GWPs used in the NZS. The defendant's suggestion that use of the lower GWPs would result in the quantified policies meeting CB6 is untenable. First, the NZS and the advice given to the Minister on 15 October 2021 proceeded on the basis that international discussion at COP26 on this issue should not be pre-empted (see Ms. James WS paras. 54-55 and 148-149). Second, and in any event, the NZS expressly relied upon the conservatism in the use of the "with feedback" GWPs as providing "additional headroom" with which to manage the uncertainty in the Strategy's emissions projections in the event of the alternative set of GWP values being adopted. That conservatism was to be maintained until a future review during the implementation of the policies (see [89] above). That formed an intrinsic part of the policy approach adopted in the NZS. It is not permissible to ask the court in effect to ignore or rewrite this part of the Strategy. For their part, the claimants complain that this same subject was mentioned at the end of para. 10 of the ministerial briefing. But in my judgment the language indicates that it did not play a material part in the decision to approve the NZS and I do not think it would be appropriate to grant the claimants any relief in this regard.

158. The claimants submitted that the delivery pathways did not involve any assessment at all of the predicted effects of the defendant's proposals and policies: they simply set out requirements, alternatively aspirations, for meeting CB6. This turns out to be immaterial. The defendant's response to ground 1(i) rests upon the comparative approach taken in the defendant's decision as summarised at [118], [132] and [135] above. In this context I also refer again to Mr Honey's response set out at [134] and [136] above.

159. Complaint was also made about the looseness of some of the language used in the NZS, such as "keeping on track" for meeting the carbon budgets or "putting us on the path for Carbon Budget 6". I accept Mr. Wolfe's submission that there is a difference between s.13(1) and (2) in that the latter uses slightly softer language, "with a view to meeting" when dealing with the 2050 target (and any later target set under s.5(1)(c)). But this is because the central focus of s.13 is the preparation of measures which will enable the carbon budgets to be met. Measures which are considered by the Secretary

of State to pass that test are also required by s.13(2) to have the aim of meeting the 2050 target. However, reading the NZS fairly and as a whole, I do not accept Mr Wolfe's suggestion that when he addressed the carbon budgets the Secretary of State made the error of applying the wrong test in s.13(2). Instead, the phrases criticised by the claimants are consistent with the correct test in s.13(1).

160. In his first witness statement, Mr. Michael Childs, the Head of Science, Policy and Research of Friends of the Earth Limited, gave a number of examples of what he considers to be a lack of detail in certain proposals in the NZS or policy gaps. This court is not in a position to adjudicate on matters of that nature in proceedings for judicial review (see [22] above). No doubt the claimants are aware of this, because the points were not advanced in any detail during the hearing. I need say no more about that evidence.

*Ground 1(i) - the duty in section 13(1) of the CCA 2008*

161. The claimants submit that in order to be satisfied under s.13(1) that "proposals and policies" will enable the carbon budgets to be met, the Secretary of State, or in this instance the Minister, had to make an assessment of the time-scales within which the measures would take effect and their impact on reducing GHG emissions. Such an assessment necessarily required numerical predictions of the contribution which the proposals and policies would make to meeting the carbon budgets.

162. According to the claimants, the Secretary of State fails to comply with his duty in s.13(1) if his numerical projections show that his proposals and policies would reduce GHG emissions by only a proportion (e.g. 95%) of the reductions required to meet the carbon budgets. They say that to satisfy his duty, the Secretary of State's numerical projections must show that the policies with quantifiable effects will enable at least 100% of those required reductions to be achieved. Provided that that test is met, the claimants accept that s.13(1) does not preclude the Secretary of State from making *in addition* a qualitative judgment about the effects of one or more of his policies on meeting a carbon budget. But what the Secretary of State may not do is to rely upon a *qualitative* judgment of that kind to overcome a shortfall revealed by his *quantitative* analysis, the numerical projections, for enabling the carbon budgets to be met.

163. There are a number of points on the interpretation of s.13 which have become common ground between the parties.

164. Firstly, the obligation on the Secretary of State under s.13 is a continuing one.

165. Secondly, his duty is to *prepare* measures that will enable the carbon budgets to be met. The statutory scheme recognises that proposals will evolve over time and will be introduced and developed at different stages. Policies may need to be reconsidered as circumstances change. I would add that this is reinforced by s.10(2) of the CCA 2008, which requires the Secretary of State to take into account a wide range of considerations (see [36] above) which will be subject to considerable change over time.

166. Thirdly, it is agreed that the phrase "proposals and policies" is deliberately broad. The CCA 2008 received Royal Assent on the same day as the Planning Act 2008. Parliament's consideration of the two Bills overlapped. I agree with the parties that the Supreme Court's conclusion in *R (Friends of the Earth Limited) v Secretary of State for*

*Transport* [2021] PTSR 190 at [105] – [106] that the meaning of “Government policy” in s.8 of the Planning Act 2008 is restricted to “established policy”, does not apply to s.13(1) of the CCA 2008. Mr. Wolfe and Mr. Coppel also accepted that the phrase “proposals and policies” includes an emerging policy or a proposal to be further developed. That must be correct. The context in which s.13 sits includes carbon budgets which may cover a period ending up to 16 years into the future, the 2050 target and the innovative nature of important aspects of climate change technology.

167. Fourthly, it is agreed that it is a matter of judgment for the Secretary of State to decide (a) on the proposals and policies which should be prepared and (b) whether they will enable the carbon budgets to be met. I return to this subject below.
168. Fifthly, Mr. Honey submitted, rightly, that s.13(1) does not require the Secretary of State to be certain that his proposals and policies will enable the carbon budgets to be met. Read in context, the word “will” cannot be taken to indicate that certainty is required. It was used simply because the duty imposed by s.13(1) is concerned with a predictive assessment about the future. Similarly, the claimants said that the Secretary of State must make an assessment of “the expected impact” of the proposals and policies (para. 39 of the claimants’ skeleton).
169. But the claimants then used various expressions to describe the strength of this expectation, such as “some certainty” or “a degree of certainty”. However, in a context where certainty is not required by the legislation or even achievable, I do not think it appropriate to use that word, even with qualifications of the kind suggested by the claimants. Such language is so ambiguous that the reference to “certainty” is misleading.
170. Instead, in my judgment the word “enable” should be given its ordinary meaning of “to make possible or effective” (Oxford English Dictionary). Here the emphasis is on policies which, taken overall, the Secretary of State judges will be “effective” or efficacious for achieving the reductions set by the carbon budgets.
171. Mr. Wolfe submits that there is a distinction between the language of s.13(1) and that of s.12(1) and (2). He suggests that the latter imposes a less onerous obligation on the Secretary of State to set out an “indicative range” for each of the years of the carbon budget just set, within which he *expects* the amount of the UK net carbon account to fall. I see no material difference for the purposes of the issues in this case. Section 13(1) uses “will enable” and “to be met” because they relate to the object of the proposals and policies being prepared and an assessment of the effect of those measures. That includes consideration of what the Secretary of State expects to be achieved during a budgetary period. In the same vein, s.14(2)(b) refers to the time-scales over which policies are “expected” to take effect.
172. Mr. Wolfe also submitted that because s.13(3) requires that the proposals and policies must contribute to sustainable development, it must be inferred that the Secretary of State is obliged to include in his assessment under s.13(1) the time-scales over which his proposals and policies are expected to take effect. He relied upon the definition of “sustainable development” adopted in Resolution 42/187 of the United Nations General Assembly: “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (*Spurrier* at [635]). I do not

accept that the concept of sustainable development can support the highly specific interpretation of s.13(1) for which Mr. Wolfe contends.

173. Nevertheless, in my judgment there are two more straightforward routes by which s.13(1) requires the Secretary of State to assess the time-scales over which his proposals and policies are expected to take effect. First, this must be an obviously material consideration in predicting whether those measures will enable carbon budgets to be met (applying the tests set out in [200] below). Second, s.14(2)(b) implies that the point will already have been addressed when the policies covered by the s.14 report were being prepared under s.13.
174. Returning to the claimants' main submission, counsel accept that there is no express language in the legislation requiring the Secretary of State to take a quantitative approach nor, in particular, to be satisfied quantitatively that those policies which are quantifiable will enable at least 100% of the emissions reduction required by each carbon budget to be met. Instead, they agree that they have to show that this requirement is necessarily implicit in the legislation.
175. On this point they argue that s.13 (and indeed s.14) must be interpreted so as to support the duties imposed on the Secretary of State by ss.1 and 4. The targets are quantitative in nature and not qualitative. The carbon budgets are set by the Secretary of State having regard to the advice of an expert body, the CCC, and on the basis that he considers them to be realistic. Furthermore, they will have been prepared after taking into account the range of environmental, socio-economic, fiscal, political, scientific and technological considerations referred to in s.10(2). The scheme requires the Secretary of State to plan to achieve emissions reductions so as to comply fully with those budgets, reflecting the time-scales over which it is expected that his proposals and policies will take effect. Sections 16-20 require the UK's progress in meeting carbon budgets to be monitored on a numerical basis.
176. The claimants pointed to passages in the defendant's pleadings which suggested that whether *any* quantitative analysis is to be undertaken at all in discharging the obligation in s.13(1) is entirely a matter of judgment for the Secretary of State. However, in his submissions Mr. Honey rightly accepted that the obligations in s.13 and s.14 cannot properly and rationally be satisfied without quantitative projections and analysis of the effects of the proposals and policies in reducing GHG emissions.
177. I conclude that there is no basis in the statutory scheme to justify the court holding that the obligation in s.13(1) requires the Secretary of State to be satisfied by quantitative analysis that measures with quantifiable effects will enable at least 100% of the emissions reductions required by the carbon budgets to be achieved.
178. Plainly the targets are quantitative in nature and the provisions for monitoring the progress made each year and whether targets are being met involve measurement of the UK's actual performance in reducing emissions. But s.13(1) is different in that it involves making a predictive assessment many years into the future. Such predictions inevitably involve significant uncertainty, for example, in relation to future circumstances falling within s.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 (see below).

179. There is no reason to think that Parliament intended that s.13(1) could only be satisfied by the predicted numerical effects of those policies which are quantifiable. If Parliament had intended to impose such a significant constraint on the Secretary of State's ability to judge how to discharge his duty, it would have said so. It did not and the language it has used does not give rise to any implication to that effect.
180. To some extent the claimants' argument proceeds on the basis that there is a clear distinction between quantitative and qualitative analysis for the purposes of s.13(1) of the CCA 2008. At first glance that might appear to be so: one uses numbers and the other need not do so. But certainly in the present context, the distinction is illusory. The kind of quantitative analysis which is carried out is not focused simply on empirical measurements of past or present conditions. It is not a purely objective exercise. It 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.
181. In order to carry out predictive, quantitative analysis the defendant's officials have had to use a number of mathematical models. In *R (Mott) v Environment Agency* [2016] 1 WLR 4338 the Court of Appeal recognised that the use of models of this kind involves expert judgment (see e.g. [78]). That formed part of the Court's reasoning for its acceptance that decisions based on scientific, technical and predictive assessments should be afforded an enhanced margin of appreciation in judicial review (see also *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]).
182. Here, models were used to link various matters relating to the policies under consideration and to assess their future effects. Judgment is needed in the construction and use of a model, for example, to create the formulae which express numerical relationships between different factors, or sets of factors, and to express the effects of changes over time. Judgment is required in the preparation of inputs for the modelling exercise and in the interpretation of the results. The simple fact that the outcomes of modelling are expressed in numerical terms cannot disguise the dependency of such analysis on the use of judgment.
183. Although the Secretary of State is assisted by the modelling work by his team of experts, the results of that exercise will be subject to uncertainties, some of which may be expressed in numerical terms and others which may not. Ultimately, the Secretary of State's decisions made under s.13(1) on the preparation of proposals and policies are matters of judgment for him. Those judgments will be informed, but not circumscribed, by the quantitative analysis carried out.
184. The claimants expressed concern that if the obligation in s.13(1) could be satisfied by taking into account a qualitative judgment on the unquantifiable effects of policies, then it would be possible for decisions of the Secretary of State to be based not on policies contributing 95% of the emissions reductions required by carbon budgets, but only say 50% or even less. I do not share this concern for a number of reasons.
185. As the claimants have said, s.1(1) and the carbon budgets set numerical targets. The Secretary of State accepts that there must be some quantitative assessment of the effects of the proposed policies (see [176] above). If those quantified effects falls

significantly below meeting the whole of the emissions reductions required, then the Secretary of State would need to be satisfied that the meeting of that shortfall by qualitative analysis is demonstrated to him with sufficient cogency. As that shortfall increases, so that task would be likely to become increasingly challenging for the Secretary of State and his officials.

186. Although the measures prepared by the Secretary of State under s.13 do not have to be approved by Parliament (contrast a national policy statement prepared under Part 2 of the Planning Act 2008), they will be scrutinised by the CCC as an expert body, by Parliament, the scientific community, bodies such as the claimants and the wider public.
187. As I explain below, the briefing given to the Secretary of State when approving a package of policies for the purposes of a s.14 report, and the report itself, must address (a) the assessment made by officials of the quantitative contributions that individual policies are expected to make to meeting carbon budgets (and the 2050 target) and (b) the justification for relying upon unquantified policies to make up any predicted shortfall in meeting a statutory target. These requirements enable the scrutiny, firstly by the Secretary of State of the policy package, and secondly by Parliament, the CCC and others of the s.14 report, to be effective and more rigorous.
188. The CCC's annual reports to Parliament under s.36 of the CCA 2008 on the progress made in dealing with climate change include the success (or otherwise) of measures prepared under s.13. The Secretary of State must report to Parliament responding to the points made by the CCC (s.37). In addition, under s.39 the CCC may give its independent assessment of a s.14 report by the Secretary of State, as they have done in relation to the NZS. It is apparent that the CCC as an expert body scrutinises the work of the Secretary of State and his Department with great care and in depth. The CCA 2008 proceeds on the basis that the reports of the CCC will provide much assistance to Parliament.
189. The Secretary of State is accountable to Parliament for his proposals and policies under s.13, for the work undertaken by his Department and for the performance of the UK in meeting the carbon budgets and the 2050 target (see e.g. ss.16, 18, 19, 20 and 37). This includes the obligation to answer Parliamentary questions and to appear before Parliamentary Committees. The Committees have the ability to call for evidence and information, to examine witnesses and to report to the relevant House. By such means, "the policies of the executive are subjected to consideration by the representatives of the electorate [and] the executive is required to report, explain and defend its actions...". Thus, Parliamentary accountability is no less fundamental to our constitution than Parliamentary sovereignty (*R (Miller) v The Prime Minister* [2020] AC 373 at [46]).
190. It is through these mechanisms that the merits, realism efficacy of the Secretary of State's climate change policies can be probed and evaluated, so that he may consider, for example, whether any additional work needs to be undertaken, amendments made, or new measures taken, pursuant to his continuing obligation under s.13(1).
191. Finally, the Secretary of State's consideration of whether his proposals and policies will enable the carbon budgets to be met may be the subject of judicial review. The courts have a duty to give effect to the law, irrespective of a Minister's accountability to Parliament. The fact that he is accountable to Parliament does not mean that he is

immune from legal accountability to the courts (*Miller* at [33]). For example, the interpretation of the CCA 2008 is plainly a matter for the court.

192. Sometimes the principle of Parliamentary accountability is used to justify restraint in judicial review, or even non-justiciability (*Miller* at [47]). In this case, the Secretary of State has not argued that his functions under s.13(1) are non-justiciable. He was right not to do so. Although the court may need to tread carefully in relation to some issues and apply an enhanced margin of appreciation, s.13(1) does not merely confer a power on the Secretary of State. It imposes a duty, compliance with which may be the subject of judicial review. If, for example, the court should grant permission for a legal challenge to be brought on the grounds that the “split” between quantitative analysis under s.13 was irrational (a point not advanced in any of the present cases) it may insist, if it considers it appropriate, upon a sufficiently clear and full explanation of the reasoning process of the defendant and his officials, as a *quid pro quo* for that enhanced margin of appreciation (*Mott* at [64]).
193. Accordingly, I conclude that s.13(1) of the CCA 2008 does 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 obligation in s.13(1) does not have to be satisfied by quantitative analysis alone.

*Ground 1(ii) - the legal sufficiency of the briefing provided to the Minister*

194. Under the first component of s.13(1) it is a matter of judgment for the Secretary of State to decide which proposals and policies should be prepared and when (see [165]-[167] above). Judicial review does not provide an opportunity for a claimant to challenge the merits or demerits of the Secretary of State’s policies. A challenge to the rationality of such policies must not be used as a cloak for a merits challenge. Having regard to the case law summarised in *Spurrier* at [141] *et seq.*, a rationality challenge to the selection and content of policy would involve a low intensity of review, or a “light touch”, *a fortiori* in relation to policies of a high level, strategic nature.
195. The second component of s.13(1) is the Secretary of State’s obligation to be satisfied that his proposals and policies will enable the carbon budgets to be met. As I have explained, this depends upon the making of a predictive assessment by the Minister. The nature and extent of the work to be carried out is a matter of judgment for the Secretary of State and his officials, subject, of course, to satisfying the requirements of the legislation. Otherwise, such judgments may only be challenged on *Wednesbury* principles (*R (Khatun) v Newham London Borough Council* [2005] QB 37). On that last point, the courts accord an enhanced margin of appreciation to decisions involving, or based upon, scientific, technical or predictive assessments by those with appropriate expertise (see *Mott*). In this case the assessments were carried out by officials whose expertise is not questioned. Not surprisingly, the claimants do not bring a legal challenge to any of the technical assessments.
196. Instead, the claimants contend that: -
- (i) Omissions from the material provided to the Minister in October 2021 rendered his briefing legally insufficient for him to be satisfied under s.13(1) that the proposals and policies would enable CB6 to be met; and



- (ii) The NZS did not comply with s.14 because the same matters were omitted from that report.

I will deal with issue (ii) under ground 2 below.

197. According to the claimants, those omissions were: -

- (a) The lack of an assessment of the time-scales over which the proposals and policies were expected to take effect;
- (b) The failure to identify under the quantitative analysis the contribution each quantifiable proposal or policy would make to meeting the carbon budgets;
- (c) The failure to identify under the qualitative analysis which proposals and policies would meet the 5% shortfall for CB6 and how each would do so.

198. The relevant principles were laid down by the Court of Appeal in *R (National Association of Health Stores) v Secretary of State for Health* [2005] EWCA Civ 154 and by the High Court of Australia in *Minister for Aboriginal Affairs v Peko-Wallsend Limited* [1986] 162 CLR 24. These decisions were analysed in *Transport Action Network Limited* at [60] – [73], and *R (Save Stonehenge World Heritage Site Limited) v Secretary of State for Transport* [2022] PTSR 74 at [62] – [65]. That analysis need not be repeated here.

199. 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.

200. 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 (*National Association of Health Stores* at [62]-[63] and [73]-[75]; *R (Samuel Smith Old Brewery (Tadcaster) v North Yorkshire County Council* [2020] PTSR 221 at [30]-[32]; *Friends of the Earth* at [116]-[120]; *Oxton Farm v Harrogate Borough Council* [2020] EWCA Civ 805 at [8]. In this regard, it is necessary to consider the nature, scope and purpose of the legislation in question.

201. I deal first with omissions (b) and (c). There is no dispute that those matters were not addressed in the briefing to the Minister on 15 October 2021. The defendant has not suggested that they were addressed in any other briefing.

202. The statutory context is of paramount importance: -

- (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.

203. Given the confusion that has arisen in the defendant's case about the use of the modelling of the delivery pathways, I should make it clear that [198(vii)] above does not refer to the modelling of the delivery pathways as has been described to the court. Instead it refers to the type of quantitative analysis carried out by BEIS to quantify predicted reductions resulting from proposals and policies in the NZS (giving in this instance a cumulative estimate that those measures were expected to deliver 95% of the reduction required by CB6). It is plain that BEIS had information on the contributions of individual policies (or groups of policies) to that cumulative figure. There has been no suggestion that that cumulative figure could sensibly have been produced without an assessment of the effects of individual policies.
204. In my judgment, 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.
205. Ms. Simor QC, on behalf of ClientEarth, pointed to those parts of the s.14 reports published in 2009 and 2011 (see [101] above) which did set out the contributions made by individual policies to achieving CB1 to CB4. It appears, however, that this information was not presented in the Clean Growth Strategy (2017), which also covered CB5. The reason for that change in practice is not clear.
206. Ms. James states that for the NZS the dataset produced by the Department included annual emission reductions in CO<sub>2</sub>e against each quantified proposal or policy, split between traded and non-traded sectors (see [1015] above). However, that information was not presented to the Minister in October 2021 in any form, not even in summary form. Apart from the table included in the ministerial submission (see [128] above) the numerical information he received was essentially that set out in the NZS.
207. The NZS presented the delivery pathway to 2037 by sector (figure 13), indicative pathways for each sector, and the projections in the Technical Annex of emissions for the carbon budget periods, specifically CB6, both for the UK as a whole and by sector. The analysis looked at the effect of the NZS policies cumulatively on each of the seven sectors but did not go any further into the policy-specific analysis which BEIS had carried out in order to produce the overall figures placed before the Minister.
208. The Minister was provided with a list of policies and proposals in the NZS which told him which ones had been quantified and which had not (see [126] above). Plainly there was no need for detailed workings to be presented, but nothing more was said about that quantification, not even a summary of individual policy contributions, for example, in the list at Annex C to the ministerial submission.
209. Moreover, Mr. Coppel QC, on behalf of Good Law Project and Ms Wheatley, pointed out that the Minister was told that for some of the "quantified" measures options were still to be explored or that consultation was yet to take place.

210. I accept the submission made by Mr. Honey that individual policies may interact and some may have a combined, rather than a separate effect. But that does not alter the point that individual policy data was generated within the Department, even if it may have been necessary to group some of it together. The material presented to the Minister did not go below the national or sector levels referred to above, to look at the contributions to emissions reductions that would be made by individual policies where quantified, or even policies which had to be grouped together. The subject was not addressed at all.
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 s.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".
212. My general interpretation of the statutory scheme applies *a fortiori* to the circumstances of the NZS. The Minister was told in para. 8 of the submission that the assessment was based on an assumption that the quantifiable proposals and policies would be "delivered in full". As we have seen, the NZS described the scenarios and the delivery pathway as highly ambitious and referred to considerable delivery challenges. It was in this context that officials projected that the UK would "overachieve" CB4 by 11 Mt CO<sub>2</sub>e and CB5 by 72 Mt CO<sub>2</sub>e a year, but would achieve only 95% of the emissions reductions required for CB6. Ultimately, the Minister's decision depended upon unquantified measures and other quantified measures to be developed further (see [144]-[145] above) and upon comparison with a delivery pathway which was said to meet the CB6 target, but only just, and was in any event subject to a wide uncertainty range.
213. In my judgment, 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 s.13(1).
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 s.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.

215. The role of the CCC is to give advice as an expert body rather than to opine on questions of law. But nonetheless the court should give considerable weight to their advice in December 2020 on the setting of CB6 that the Government’s net zero plans should include a “quantified set of policy proposals” and their criticism in October 2021 of the NZS for failing to quantify the effect of each policy and proposal on emissions reductions ([65]-[67] and [152] above).
216. There remains the manner in which the 5% shortfall was handled in the ministerial submission. Although this was critical to the advice given that the proposals and policies would enable CB6 to be met, the Minister was not told:-
- (i) Which unquantified policies were being relied upon as part of the judgment that was made;
  - (ii) Which already quantified policies were assumed to be capable of further development;
  - (iii) Alternatively, whether the advice and comparison with the delivery pathway did *not* involve relying upon or identifying any specific policies;
  - (iv) Whether any further calculations had been performed, or whether this exercise was solely a matter of judgment.

Although Ms. James’s witness statement did supply more detail than was contained in the briefing to the Minister, it did not address those four issues.

217. Having regard to the statutory scheme summarised above, I have reached the firm conclusion that the four matters set out in [216] above were also “obviously material” considerations which the defendant was legally required to take into account so that he could discharge his obligation under s.13(1) rationally. Without that information being included in the briefing the Minister was unable to decide for himself whether to attach any, and if so how much, weight to the manner in which officials advised that the 5% shortfall could be overcome.
218. Lastly, I turn to omission (a). In so far as the effects of the proposed policies were judged to be quantifiable, the periods during which those effects were assessed or predicted to occur will have formed part of the modelling work. Otherwise, this was a matter for qualitative assessment. I accept the defendant’s submission that it was a matter of judgment as to how much of this detail should have been included in the ministerial submission, including the draft NZS.
219. There can be no doubt that the NZS did refer to time-scales for a number of policies. Ms. James explains that the NZS contains many statements on the time-scales over which specific policies were expected to take effect (see e.g. paras. 25 and 161 of WS). This was achieved in the description of the delivery pathway, trajectories for each sector, and more generally the text of chapters 2 to 4. Her exhibit SJ17 contains 12 pages of material summarising references to time-scales in chapters 2 to 4 of the NZS. In addition, figure 16, referred to at [81] above, shows the expected milestones and

activities for each of the sectors. On the material before the court, the claimants have not demonstrated that the judgment made by officials on the extent to which this subject (viewed in isolation) should be addressed in the briefing to the Minister was legally flawed, applying the *Wednesbury* standard.

220. However, the requirement for the defendant to consider adequate briefing on the matters set out in [211]-[214] and [216]-[217] above is inevitably interrelated with assumptions about when individual proposals and policies will come into effect and produce reductions in emissions. Accordingly, it will be necessary for this subject to be addressed as part of the Strategy and the briefing.
221. For the above reasons, I uphold ground 1, but only to the extent set out above.
222. As I have said, the obligation under s.13 is a continuing one ([164] above). But it is necessary to record that the argument in this case has focused solely on whether the defendant complied with his duty under s.13 at a particular point in time, October 2021, which was directly connected to the discharge of his obligation at the same time to present a report under s.14, the NZS. His s.13 decision had to include measures to address CB6. The announcement to Parliament and the public of the defendant's proposals and policies was plainly one of the key stages in the operation of the CCA 2008. The parties' submissions did not address any implications of the issues I have had to resolve for compliance with s.13 on a continuing basis, nor was there any evidence on that aspect. Accordingly, my reasoning and conclusions on, for example, the legal adequacy of information before the Minister on quantification, should not be treated as necessarily applying to compliance with s.13 at *any* point in time. No doubt the development of policy measures is kept under review by officials and by the Secretary of State, but my judgment does not address how often and when quantitative analysis might be required to be carried out. Such issues are essentially matters of judgment for the defendant and his officials.

## **Ground 2**

### *Submissions*

223. The claimants submit that one of the purposes of s.14 of the CCA 2008 is to enable Parliament to scrutinise the Secretary of State's proposals and policies for meeting the current and future carbon budgets, including the budget which will have recently been set, and to hold him to account in respect of those matters. The statute expressly requires the report to: -
- (i) set out the Secretary of State's "current" proposals and policies under s.13;
  - (ii) set out the time-scales over which those proposals and policies are expected to take effect;
  - (iii) explain how the proposals and policies effect different sectors of the economy; and
  - (iv) outline the implications of the proposals and policies for the crediting of carbon units to the net UK carbon account for each budgetary period.

224. The claimants submit that for a report to meet the requirements of s.14 it must include (a) a numeric explanation of the basis for the Secretary of State’s conclusion that his policies and proposals will enable the carbon budgets to be met and (b) a numeric analysis of the extent to which those policies and proposals individually and in combination will enable those targets to be met. That information is necessary for the purposes of s.14, namely to facilitate Parliamentary scrutiny and accountability and to satisfy the public interest in transparency.
225. The claimants acknowledge that a s.14 report is a “snapshot”, in the sense that such a document is produced once every 5 years and therefore will explain how the Secretary of State expects that carbon budgets will be able to be met, viewed as at the time of the report. But they say that the requirements for which they contend are nevertheless consistent with that position.
226. The claimants submit that the NZS failed to set out the numeric contributions of individual policies and proposals toward reducing GHG emissions or the time-scales over which they were each expected to take effect, as had previously been done in the UK Low Carbon Transition Plan (2009) and the Carbon Plan: Delivering Our Low Carbon Future (2011). They also complain that the document did not even reveal that the quantification carried out by BEIS, and described in the Strategy, of the cumulative effect of the proposals and policies addressed only 95%, rather than the whole, of the reductions claimed, or explain how the 5% shortfall was expected to be made up. The NZS did not contain the explanation in the ministerial submission dated 15 October 2021 or give any clue that that approach had been taken. Rather, tables 6 and 8 of the Technical Annex to the NZS gave the impression that the quantitative analysis carried out showed that the Secretary of State’s proposals and policies would enable CB6 to be fully met.
227. The defendant submits that s.14(1) requires the Secretary of State to publish a report “setting out proposals and policies for meeting the carbon budgets...”. The object is to ensure Parliament is informed of the Secretary of State’s current proposals and policies. Section 14 does not require the report to provide an explanation or quantified information to show that his proposals and policies will enable the carbon budgets to be met. Technical scrutiny of the Secretary of State’s proposals and policies is provided by the CCC, not by Parliament. Subsections s.14(2) to (4) do not lend any support to the claimants’ case on what the report to Parliament is required to contain.
228. Mr. Honey referred to *R (Packham) v Secretary of State for Transport* [2021] Env. L.R. 10 at [87] where Lindblom LJ said: -

“..... the statutory and policy arrangements we have described, while providing a clear strategy for meeting carbon budgets and achieving the target of net zero emissions, leave the Government a good deal of latitude in the action it takes to attain those objectives — in Mr Mould’s words, “as part of an economy-wide transition”. Likely increases in emissions resulting from the construction and operation of major new infrastructure are considered under that strategy. But — again as Mr Mould put it — “it is the role of Government to determine how best to make that transition”.”

229. A report must address the matters referred to in s.14(2) to (4), but it is a matter of judgment for the Secretary of State as to the extent to which any matter is addressed in the report. Mr. Honey sought to draw an analogy with the approach taken by the courts to judicial review of compliance with the requirements for Strategic Environmental Assessment of plans and programmes (*Spurrier* [2020] PTSR 240 at 434 and see also the Supreme Court in the *Friends of the Earth* case [2021] PTSR 190 at [142] – [148]).
230. Mr. Honey emphasised the language in s.14(1), “a report setting out proposals and policies”, and submitted that this provision essentially only requires Parliament to be told what those measures are. He submits that the thinking which lay behind the Secretary of State’s policies, the rationale, does not have to be provided.

### *Discussion*

231. I do not accept the defendant’s interpretation of s.14. It treats the requirement to “set out” the defendant’s proposals and policies as amounting to little more than a requirement to publish those measures.
232. The phrase “set out” can have a very wide range of meanings (see the Oxford English Dictionary). For example, it may mean simply to lay out or display, or it can mean to express in detail, describe or enumerate, or to put down on paper in express or detailed form. The specific sense used in s.14 must depend on the context and purpose of that provision.
233. The Explanatory Notes for the CCA 2008 state that s.14 “will ensure that Parliament is clear about *how* the Government intends to meet its obligations under the Act” (emphasis added). That plainly indicates that the report which must be provided is something more than a statement simply telling Parliament what the proposals and policies are. Given the nature of the problems posed by climate change, the need for substantial changes across the country and the challenges involved, telling Parliament how the Secretary of State proposes to meet the carbon budgets does indeed require him to explain the thinking behind his proposals and how they will enable the carbon budgets to be met.
234. This is also clear from s.19(1). If a final statement for a budgetary period is laid before Parliament under s.18 and the carbon budget has not been met, the Secretary of State must provide Parliament with a report “setting out” proposals and policies to *compensate* in future periods for the *excess* emissions. In essence, that is the same language as s.14(1). I do not accept that, as a matter of law, it would be sufficient for such a report simply to tell Parliament what those new measures are. In such circumstances, s.19(1) would require the Secretary of State to explain how his proposals are intended to remedy the problems encountered so as to meet the targets.
235. Accordingly, both s.14 and s.19 require an explanation to be provided to Parliament as to how the Secretary of State’s policies are intended to meet the statutory targets. I do not accept that those obligations could properly be discharged without any quantitative explanation being provided to Parliament. The defendant submits that the legislation does not require the Department’s detailed workings or the modelling to be provided to Parliament. No doubt that is correct, but the claimants have not taken that extreme position.



236. My reading of the obligation in s.14(1) is reinforced by the specific requirements of s.14(2)-(4). For example, s.14(3) requires an explanation of how the proposals and policies affect different sectors of the economy. It could not be said that the report need not address effects upon the economy as a whole. Effects on the national economy and on sectors are plainly relevant to the requirement under s.14(1) for the Secretary of State to explain how his measures will enable the carbon budgets to be met.
237. Section 14(2) requires the Secretary of State to “set out”, or explain, the time-scales over which his measures “are expected to take effect”. As Mr, Honey rightly points out, the carbon budgets can extend many years into the future. Current proposals and policies will be implemented over a range of different time-scales. Some measures will already be in the course of implementation or almost concluded, some will be imminent, and others for the longer term. The approximate periods over which different proposals and policies are expected to be implemented will have been taken into account in the modelling and quantitative analysis which enabled officials to advise the Secretary of State that certain measures would enable 95% of the reduction required by CB6 (and all of CB4 and CB5) to be achieved. There is a clear link between the Secretary of State’s explanation of those time-scales and his estimates of the reductions in the amounts of GHG emissions. Quantification of the reductions he expects from the implementation of his s.13 policies is legally essential to the explanation which the Secretary of State is required to give under s.14(1) as to how he expects those measures to meet carbon budgets.
238. Similarly, the requirement in s.14(4) to outline the implications of the defendant’s s.13 policies for carbon crediting and the net UK carbon account implies that quantitative analysis is necessary in relation to the effects of those policies on the net UK carbon account.
239. The defendant’s narrower interpretation of the scope of s.14 is not supported by the expert role given by the CCA 2008 to the CCC. On the contrary. The legislation requires Parliament to be provided with statements each year by the Secretary of State on GHG emissions in the UK (s.16), his final statement after each budgetary period has ended (s.19), annual reports by the CCC on progress made and needing to be made on meeting carbon budgets and the 2050 targets, including whether they are likely to be met (s.36) and the Secretary of State’s response to the CCC’s points (s.37). Plainly, those requirements could not be met without quantitative analysis being provided to Parliament to show the extent to which the Secretary of State’s proposals and policies are meeting, and are likely to meet, the statutory targets. Those proposals and policies are the central focus of the methods laid down in the statutory scheme for meeting the carbon budgets and the 2050 target.
240. Explanation and quantitative analysis are essential to the reports which are to be provided under ss.36 and 37 for Parliament to scrutinise. Those reports look both to the past and to the future. There is no good reason why the legal approach should be any different for the reports to be provided for Parliamentary scrutiny under ss.14 and 19.
241. Because the reports under ss.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 s.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.

242. How then is the court to assess whether the Secretary of State has complied with s.14? The court is dealing with a report by the Executive to Parliament on matters of national policy. Section 14 facilitates Parliamentary accountability and it is necessary to respect the constitutional separation of functions between the Executive, Parliament and the Courts. Parliament is well able to call for more information to be provided where it wishes to do so. The court needs to tread carefully in this area (see [189] – [192] above). But in addition, ss. 14 and 19 serve the public's interest in transparency regarding Government policy under the CCA 2008. Ultimately, it remains for the court to interpret the legislation and to resolve legitimate disputes on the scope of the obligations it imposes.
243. Mr. Honey makes the point that the CCA 2008 does not require a report under s.14 to be the subject of public consultation before the adoption of the policies by the Secretary of State. If consultation had been required, then the *Gunning* principles, approved by the Supreme Court in *R (Moseley) v Haringey London Borough Council* [2014] 1 WLR 3947, would have been applicable. A consulting party is required to give consultees sufficient explanation and information to enable intelligent consideration and responses by the latter. On this basis Mr. Honey seeks to distinguish a report under s.14 of the CCA 2008 from the “National low carbon transition and mitigation plan”, adopted by the Irish Government under s.4 of the Climate Action and Low Carbon Development Act 2015, and considered by the Supreme Court of Ireland in *Friends of the Irish Environment CLG v The Government of Ireland* [2020] IESC 49. The Irish legislation did require public consultation on that draft plan.
244. However, in the final analysis I do not think that this distinction makes any substantial difference to the determination of the issues in this case. I say that for two reasons.
245. First, I see no justification for the legal adequacy of a s.14 report required in the context of Parliamentary accountability to be materially lower than that of a report issued for public consultation, certainly not when dealing with the core legal requirements for reports relating to climate change policy. 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 s.14 is also required in the interests of public transparency.
246. Second, the reasoning of the Supreme Court of Ireland did not rest solely on the obligation to consult the public. There was another statutory obligation of equal importance. Clarke CJ stated 6.21: -

“Second, the very fact that there must be a plan and that it must be published involves an exercise in transparency. The public are entitled to know how it is that the government of the day intends to meet the NTO. The public are entitled to judge whether they think a plan is realistic or whether they think the policy measures adopted in a plan represent a fair balance as to where the benefits and burdens associated with meeting the NTO are likely to fall.

If the public are unhappy with a plan then, assuming that it is considered a sufficiently important issue, the public are entitled to vote accordingly and elect a government which might produce a plan involving policies more in accord with what the public wish. But the key point is that the public are entitled, under the legislation, to know what the plan is with some reasonable degree of specificity.”

And then at 6.22: -

“Thus, it seems to me that key objectives of the statutory regime are designed to provide both for public participation and for transparency around the statutory objective which is the achievement of the NTO by 2050.”

247. In my judgment, that approach also applies to a report under s.14 of the CCA 2008. Such a report, and similar documents under ss. 19, 36 and 37, are to be laid before Parliament and hence published, so that there is transparency for the public as to how the Government is seeking to achieve the targets in the legislation, potential effects on different sectors of the economy, the progress made to date, whether more needs to be done and, if so, what.

248. However, there may be one distinction to be drawn with the Irish legislation. That requires the plan to “specify” the manner in which it is proposed to achieve “the national transition objective” and other matters. Hence, the judgment of the Supreme Court of Ireland focused on whether, in the court’s opinion, the national plan satisfied the statutory requirement for “specificity”. No such language appears in the CCA 2008. So I will confine myself to considering the core requirements of “explanation” and “quantification” which derive from the obligation in the CCA 2008 to “set out” proposals and policies “for meeting the carbon budgets”.

249. I rely upon the analysis at [202]-[204] above under ground 1(ii). I emphasise the point made at [202(x)] that the ability to meet the statutory targets depends upon the contributions made by a multiplicity of proposals and policies adopted by the Secretary of State. This is obviously material to the risk of delivery. It is critical to any assessment by Parliament, and by the public, of how the statutory targets are likely to be met, by what means and with what implications.

250. I also gratefully adopt the observations of Clarke CJ in the *Friends of the Irish Environment* case at paras. 6.46 to 6.47:-

“6.46 ..... In that context it must, of course, be recognised that matters such as the extent to which new technologies for carbon extraction may be able to play a role is undoubtedly itself uncertain on the basis of current knowledge. However, that is no reason not to give some estimate as to how it is currently intended that such measures will be deployed and what the effect of their deployment is hoped to be. Undoubtedly any such estimates can be highly qualified by the fact that, as the technology and knowledge develops, it may prove to be more or less able to achieve the initial aims attributable to it.

6.47 However, that is no reason not to indicate how and when particular types of technology are currently hoped to be brought on board. If it proves possible to achieve more than might currently be envisaged then, doubtless, other elements of the Plan can evolve in a way which may place a lesser burden on certain sectors. If it proves that the technology is less useful than currently envisaged, then the burden on some sectors may have to increase. But the public are entitled to know what current thinking is and, indeed, form a judgment both on whether the Plan is realistic and whether the types of technology considered in the Plan are appropriate and likely to be effective.”

251. Given the analysis set out above, I do not accept Mr Honey’s suggestion that it is significant that s.14 does not include an obligation to give reasons, unlike, for example, ss. 3(6), 7(6) and 22(7) where the Secretary makes a decision differing from a statutory recommendation of the CCC. The functions are plainly different. The language imposing the obligation in s.14 to “set out” policy measures for meeting numerical targets, read properly in context, is sufficient to carry with it requirements to provide explanation and legally adequate estimates of the quantitative effects of those policies.
252. As I have explained, the NZS did not go below national and sector levels to look at the contributions to emissions reductions made by individual policies (or by interacting policies) where assessed as being quantifiable. In my judgment it ought to have done so in order to comply with the language and statutory purposes of s.14 of the CCA 2008.
253. In addition, the NZS failed to explain:-
- (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 [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.
254. All those subjects were obviously material to the critical issue of risk to the delivery of the statutory targets. They were matters upon which the defendant was obliged to inform Parliament under s.14, and thus the public. They were not dealt with at all in the NZS, although it is plain from the evidence before the court that the information existed at the time.

255. In para. 97 of her witness statement Ms. James states that “not all” of the data collected by the Department was “intended or suitable for publication” and goes on to give four reasons. However, two points should be noted. First, the statement does not explain which parts of the dataset were thought to be unsuitable for publication, as opposed to simply being “not intended for publication”. Second, and more importantly, there is no evidence that this thinking was considered by the Secretary of State or the Minister.
256. It is the responsibility of the Secretary of State, not his officials, to lay a report before Parliament under s.14. The adequacy of such a report is a matter for him, acting on the advice of officials and with legally sufficient briefing. Here, the matters which I have concluded ought to have been addressed in the NZS were not put before the Minister (see ground 1(ii)). The Minister was therefore not in a position to form any view on whether those matters should be included in the NZS in order to satisfy s.14 or to consider the reasons for non-inclusion now put forward in the witness statement. Consequently, those four reasons are, with respect, legally irrelevant.
257. Nevertheless, I have considered those reasons. None of them alter the conclusion I have reached that, as a matter of law, the NZS did not comply with s.14 through failing to address the matters identified above. 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. Lastly, the existence of other Government mechanisms for making public “granular data about our delivery against carbon budgets and net zero” has nothing to do with the legal requirements of s.14.
258. As I have explained under ground 1(ii), the NZS does address time-scales over which policies and proposals “are expected to take effect” and the court is unable to say that the material before the Minister on that subject was legally insufficient on that subject if viewed in isolation. The same applies to the issue of compliance with s.14(2)(b) of the CCA 2008.
259. However, the requirement to provide legally adequate briefing to the defendant on the matters set out in [211]-[214] and [216]-[217] above is inevitably interrelated with assumptions about when individual proposals and policies will produce reductions in emissions. So it will be necessary for that aspect to be addressed as part of that exercise.
260. For the above reasons, I uphold ground 2, but only to the extent set out above.

### **Ground 3**

261. Mr. Coppel summarised the claimant’s argument in six stages: -

- (i) The UK has obligations under Articles 2, 8 and A1P1 to take effective action against climate change because this represents a real and “imminent threat” to “life, quality of life and to property”. These obligations arise now, notwithstanding that the relevant impacts of climate change may not be experienced until some time in the future and that it is not possible to predict with certainty exactly who will be impacted and how. The obligation under Article 2 may require protection not only for individuals identifiable in advance as the subject of potential harm, but also general protection for society. The obligation under Articles 2 and 8 may also apply to risks that materialise over time;
- (ii) The greater and more effective the action taken by the state to reduce emissions and to safeguard against climate change, the greater will be the effect in minimising the risk in the future to life, quality of life and property;
- (iii) The CCA 2008 represents an important step in the discharge of the UK’s obligations under the ECHR including the provision of general protection to society against imminent threats. In turn, the setting and meeting of carbon budgets is an important aspect of the measures put in place by Parliament to combat climate change and so protect against future threats to life, quality of life and property. Such measures against climate change should be interpreted so as to be more, rather than less, effective;
- (iv) The requirements of sections 13 and 14 are more likely to be effective in ensuring that the carbon budgets are met if they are interpreted in the more stringent way for which the claimants contend. The Claimants’ interpretation is liable to minimise future climate change impacts and breaches of Convention rights in that: -
  - Compliance with the obligation in s.13(1) must only be based on quantifiable policies meeting 100% of the carbon budgets; and
  - Greater transparency in a s.14 report enhances scrutiny of the policies and proposals so that carbon budgets are more likely to be met;
- (v) The effect of s.3(1) of the HRA 1998 is to require ss.13 and 14 of the CCA 2008 to be interpreted as the claimants contend, and not as the defendant contends. Parliament should be assumed to have intended that those provisions be interpreted so as to be more, rather than less, conducive to the protection of Convention rights;
- (vi) It is open to Good Law Project to advance these submissions, and to invoke s.3(1) of the HRA 1998 in the interpretation of ss.13 and 14 of the CCA 2008, without itself being a “victim” of an actual or potential breach of Convention rights. Alternatively, Ms. Wheatley is a “victim” for the purposes of s.7 of the HRA 1998 and is therefore entitled to invoke s.3(1).

262. It will be noted that ground 3 depends upon the application of s.3(1) of the HRA 1998. If the claimants are unsuccessful in that respect, they have not gone further by asking the court to grant a declaration of incompatibility under s.4.
263. Mr Coppel has presented a carefully constructed, interlocking argument, but it is too ambitious in a number of respects.
264. First, he accepted that his argument depends upon the proposition that s.3(1) of the HRA 1998 requires the Court to adopt an interpretation which would be more, rather than less, conducive to the protection of Convention rights and, in this context, to minimise future climate change impacts. He also accepted that he was not aware of any authority in which a court has stated that this is a permissible application of s.3(1).
265. The approach for which the claimants contend does not accord with established principle. It is only if the ordinary interpretation of a provision is incompatible with a Convention right that s.3(1) is applicable. Otherwise s.3(1) may safely be ignored. If the court does have to rely on s.3(1), it should limit the extent to which the ordinary interpretation of the provision is modified to that which is necessary to achieve compatibility (*R (Wardle) v Leeds Crown Court* [2002] 1 AC 754 at [79]; *Poplar Housing and Regeneration Community Association Limited v Donoghue* [2002] QB 48 at [75]). Section 3(1) does not allow a court to adopt an interpretation of a provision different from that which would otherwise apply in order to be “more conducive” to, or “more effective” for, the protection of a Convention right, or to minimise climate change impacts.
266. Second, the claimants’ “more conducive” approach does not provide a proper test for interpreting legislation. It raises a question of degree and leaves open the possibility that there might be another interpretation which would be even “more conducive”. On this approach how would it be possible for a court to identify the point at which the alteration of the ordinary meaning of the language used by Parliament should cease? The court would be crossing the demarcation between interpreting and amending legislation (*Ghaidan v Godin-Mendoza* [2004] 2 AC 557 at [121]). Instead, where s.3(1) is applicable, the court should limit the extent to which it modifies the ordinary interpretation of the provision in question to that necessary to achieve compatibility. For each of these two reasons alone ground 3 must fail.
267. Third, although Mr. Coppel’s proposition (i), which is essential to all of the propositions which follow, can in general be derived from jurisprudence of the ECtHR, he accepts that that court has not gone so far as to apply those principles to climate change. In my judgment, the Strasbourg decisions upon which he relies did not involve circumstances or issues comparable to those posed by climate change, for example the national and global effects involved or the extensive nature of the national measures required. I refer also to the recent analysis by the Divisional Court (Bean LJ and Garnham J) in *Gardner v Secretary of State for Health and Social Care* [2022] EWHC 967 (Admin) of the limitations of the principles laid down in the Strasbourg jurisprudence.
268. Consequently, the main source upon which Mr. Coppel relies to support his line of argument is the decision of the Supreme Court of the Netherlands in *The State of the Netherlands v Urgenda* (20 December 2019), in particular, those passages which interpret and apply Convention rights and Strasbourg jurisprudence.

269. Mr. Honey submitted that this court should not rely upon the Dutch judgment because it takes a broader view of Convention rights than is justified. Furthermore, he says that the central propositions relating to climate change which the claimants seek to take from *Urgenda* are hotly contested in three cases to be heard by the Grand Chamber of the ECtHR.
270. It is necessary to bear in mind that *Urgenda* was concerned with a very specific challenge: the legality of the State's decision in 2011 to reduce its 2020 GHG reduction target from 30% (set in 2007) to 20%. The Supreme Court referred to the need identified in the IPCC's 2007 report for emissions in developed countries to be reduced in 2020 by 25-40%, the subsequent endorsement of that target in annual international conferences of the UNFCCC since 2007, and the stricter targets introduced by the Paris Agreement in 2015. The Court decided that the Government had failed to explain why the reduction of the Dutch target to 20% was justified, in view of the longstanding international consensus that the figure should be appreciably higher. *Urgenda* provides no assistance on the interpretation of a Minister's duty to formulate policy where the legislation gives him a wide scope to exercise judgment on the content of such policy. Furthermore, given the dualist system we have in this country (*Spurrier* at [606]), care is also needed in seeking to apply a decision from a legal system with monist characteristics.
271. In *R (Ullah) v Special Adjudicator* [2004] 2 AC 323 Lord Bingham stated at [20] that, in the absence of special circumstances, a domestic court should follow the "clear and constant" jurisprudence of the Strasbourg court. That duty "is to keep pace with Strasbourg jurisprudence as it evolves over time: no more, but certainly no less".
272. In *R (Al-Skeini) v Secretary of State for Defence* [2008] AC 153 at [106] Lord Brown continued: -
- "I would respectfully suggest that last sentence could as well have ended: "no less, but certainly no more." There seems to me, indeed, a greater danger in the national court construing the Convention too generously in favour of an applicant than in construing it too narrowly. In the former event the mistake will necessarily stand: the member state cannot itself go to Strasbourg to have it corrected; in the latter event, however, where Convention rights have been denied by too narrow a construction, the aggrieved individual can have the decision corrected in Strasbourg".
273. In *R (AB) v Secretary of State for Justice* [2022] AC 487 Lord Reed PSC restated these principles at [54] – [59] and added that they did not preclude "incremental development" by a domestic court of Convention jurisprudence "based on the principles established by the European Court".
274. Whether the claimants' argument accords with the principles in [255]-[257] above is a matter for determination by the courts in this country. It has not been shown that the decision in *Urgenda* sets out a line of reasoning which conforms to those principles.
275. I agree with Mr. Honey that the claimants' argument under ground 3 goes beyond permissible incremental development of clear and constant Strasbourg case law.



## Section 31(2A) of the Senior Courts Act 1981

276. Whether it is highly likely that the outcome for the claimants would not have been substantially different if the conduct complained of had not occurred depends upon the nature of the legal errors found by the court to have taken place.
277. Under ground 1(ii) the defendant was not briefed upon, and therefore did not take into account as he was legally obliged to do, *inter alia* the contribution to reductions in GHG emissions estimated by his officials from individual policies (or groups of interacting policies). As I have explained, this was essential to the defendant's decision on whether he was satisfied that the proposals and policies in the NZS would enable the carbon budgets to be met so as to comply with s.13(1) of the CCA 2008. It is impossible for the court to conclude that it is highly likely that the defendant would still have been satisfied that he had discharged his obligation in s.13(1) if he had been provided with, and taken into account, the missing information, to assess for himself *inter alia* risks to delivery of the policies and carbon targets and whether the content of the NZS needed to be reconsidered and amended.
278. Under ground 2 the court has identified matters which ought to have been, but were not, addressed in the NZS in order to comply with s.14(1) of the CCA 2008. Parliament and the public, including the claimants, were entitled to see a report which covered those matters, so that they would properly be able to understand and address the Government's proposals and policies and their effects upon emissions reductions and socio-economic matters. Given the nature of this legal error, it is impossible for the court to conclude that it is highly likely that the outcome would not have been substantially different for the claimants and those they represent if the defendant had complied with s.14(1).

## Conclusions

279. For the reasons set out above:-
- (i) ground 3 must be rejected;
  - (ii) the challenge succeeds under grounds 1 and 2 but only to the extent indicated above;
  - (iii) all other parts of grounds 1 and 2 are rejected.

## **APPENDIX DCO.2.15**

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## BP'S RESPONSE TO DEADLINE 8

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## Deadline 8 submission

### BP'S RESPONSE TO DEADLINE 8

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#### 1. OVERVIEW

- 1.1 BP Exploration Operating Company Limited ("bp") has prepared this submission in response to Deadline 8 and provides:
- 1.1.1 bp's submissions to address the submissions made Orsted at Deadline 7 ([REP7-087](#)), and The Crown Estate Commissioners ("TCE") at Deadline 6, including at Annex 1 a Legal Opinion from Jason Coppel QC on the lawfulness of the bp's proposed protective provisions, particularly in relation to the provisions addressing the Interface Agreement;
  - 1.1.2 bp's submissions in respect of the report by the North Sea Transition Authority ("NSTA") which was published by the NSTA on 1 August 2022 (the "NSTA Technical Report") and reviews the role of monitoring for offshore carbon storage sites, with a particular emphasis on those sites with restricted access owing to co-location with other marine industries, particularly offshore windfarms (submitted by Orsted at Deadline 7 ([REP7-087](#), Annex 4, electronic page 88) as it relates to previous submissions into this examination, as well as bp's response to the additional submissions made by Mr Sewell (of Xodus) on Orsted's behalf at Deadline 7; and
  - 1.1.3 Version 5 of bp's proposed protective provisions (clean copy as Annex 3 and tracked-change version as Annex 4), to correct a minor cross-referencing error from the previous Version 4 submitted at Deadline 6.

#### 2. BP'S RESPONSE TO ORSTED'S DEADLINE 7 SUBMISSIONS AND TCE'S DEADLINE 6 SUBMISSIONS

##### **Response to Orsted's submissions**

- 2.1 Orsted's submissions at Deadline 7 in respect of the interface between the projects in the 'Overlap Zone' included minor updates to their protective provisions, and responses to:
- 2.1.1 the decision-making flowchart provided by bp at Annex 8 to its Deadline 6 submission ([REP6-046](#));
  - 2.1.2 Version 4 of bp's proposed protective provisions, submitted at Annex 2 to its Deadline 6 submission; and
  - 2.1.3 bp's further response to the Sewell Report provided at Annex 4 to its Deadline 6 submission (with its initial response having been provided at Annex 1 to its Deadline 5a submission ([REP5a-025](#)).
- 2.2 There is little new evidence included in these responses, with much of the content having been responded to and addressed in bp's previous submissions. Rather than duplicate the same in this submission, bp has signposted (for the ExA's ease of reference) where it has

responded to relevant points in its previous submissions and supplemented where it is considered there is anything material or helpful to add.

- 2.3 Specific to the minor amendments to **their protective provisions** (paragraph 1.1.1.3 of their response):
- 2.3.1 Paragraphs 3.2 to 3.12 of bp's Deadline 6 submission ([REP6-046](#), electronic pages 4 and 5) provided bp's general submissions in respect of Orsted's proposed protective provisions, and how/why they are flawed.
- 2.3.2 Specific to the amendments proposed at D7, bp commented on the inappropriate nature of the conditionality (including time-limit) proposed by Orsted in paragraph 6.6.1 of its Deadline 2 submission ([REP2-062](#), electronic page 10). Whilst that was in the context of a three month period, the same point remains in relation to a 4 month period.
- 2.4 Specific to the **decision-making flowchart** (section 2 of their response), Orsted query the accuracy of the conclusions suggested and generally assert that bp would not/should not have entered into the Interface Agreement were they to hold such conclusions, and that the Interface Agreement should continue to be the preferred forum through which the interface issues and any associated compensation can be determined. In response:
- 2.4.1 bp "adhered" to the terms of the Interface Agreement in February 2021, by virtue of becoming the 'Carbon Entity' for the purposes of the Agreement for Lease over the Endurance Store, in accordance with the requirements stipulated under clause 8 of the Interface Agreement. It was a procedural step pursuant to the extant terms of the Interface Agreement.
- 2.4.2 Nevertheless, bp has clarified in previous submissions (see para 7 of its Deadline 1 submission ([REP1-057](#), electronic page 128) that it was in December 2021 (i.e. following the adherence to the Interface Agreement in February 2021) that it was concluded that co-existence between the projects over the same area of sea-bed would not be possible, for the reasons stated in the Technical Assessment which was shared with Orsted (and TCE, BEIS and the OGA (now the NSTA)) (included at Annex 1 to bp's Deadline 1 submission, electronic page 147). Extensive further technical evidence has been submitted into this examination in support of this position, including again at this Deadline 8 (Section 3 below).
- 2.4.3 bp has also clarified why the Interface Agreement does not provide a workable solution to manage the potential compensation claims that could result from Orsted's inability to develop within the Exclusion Area, and why it is misleading to claim otherwise (paragraphs 3.32 to 3.45 of bp's Deadline 6 response, [REP6-046](#), electronic pages 8 and 9).
- 2.4.4 Whilst it may be strictly true that bp has not sought to renegotiate the terms of the Interface Agreement, it is disingenuous to suggest that bp has not sought to reach alternative agreement with Orsted in relation to this interface and Orsted have themselves referenced such negotiations in this examination. The focus of these discussions have been on a commercial resolution, rather than a variation to the IA for the implicit reason that co-existence is not deemed feasible. bp's submissions in relation to the feasibility of such voluntary agreement being reached were set out in paragraphs 3.46 to 3.50 of its Deadline 6 submissions ([REP6-046](#), electronic page 10).
- 2.4.5 The central premise of Orsted's proposals is their 'confidence' that a solution can be found to enable co-existence in the Overlap Zone (or more specifically, the Exclusion Area as the sub-part to the wider Overlap Zone). Simply, there is no substance to this confidence for the reasons submitted by bp in its various submissions into this examination, including at this Deadline 8 (see Section 3 below), and their continued suggestion that one will come forward, with their drafting predicated on the same represents a fig-leaf that cannot be relied upon

(as noted in paragraph 3.5 of bp's Deadline 6 submission, [REP6-046](#), electronic page 5).

- 2.5 Regarding Orsted's comment on **bp's protective provisions** (section 3 of their response), and specifically the revised approach put forward in Version 4 submitted at Deadline 6:
- 2.5.1 Orsted note that bp's protective provisions, and specifically the 3 year longstop/walk-away period does not incentivise bp seeking to achieve co-existence in that period. That is correct, with the central purpose of the imposition of the Exclusion Area being that that co-existence will not be possible and so the drafting is not intended to preserve that possibility.
- 2.5.2 The 'longstop' period was reduced from five years to three years in version 4 of the protective provisions in recognition of Orsted's previous submissions. It is acknowledged that this period still goes beyond the scheduled FID date for the NEP project (in accordance with the ECC plan milestones); however, there are factors outside of bp's (and its partners) control which may import unforeseen delay (e.g. government delay to the TRI Licensing model, meaning the partners need more time to decide whether to proceed with the project and crystallise the associated compensation liability under the protective provisions), and which needs to be reflected in this period.
- 2.5.3 The proposed timescale for the payment of the compensation is conceptually linked to when Orsted would have otherwise started to receive revenue resulting from generating capacity in the Exclusion Area, but with a specific date also provided to enable certainty that such compensation would be paid by a particular point.
- 2.5.4 Orsted note their previous legal submissions (REP5-076) apply equally to the revised approach put forward by bp in Version 4. To supplement bp's previous response to those legal submissions (Annex 2 of bp's response to Deadline 5a, [REP5a-025](#), electronic page 26), bp instructed Jason Coppel QC to consider and confirm the lawfulness of the approach in relation to the *vires* under s120 of the Planning Act 2008 and, particularly, any perceived breach of Article 1 of Protocol No.1 to the European Convention on Human Rights ("A1P1"). The Opinion is included at Annex 1 to this Deadline 8 submission, and provides confirmation that:
- (A) s. 120(3) PA 2008 read, in particular, with paragraph 3 of Schedule 5 to that Act, clearly provides the necessary *vires* for the inclusion of bp's proposed protective provisions in the Hornsea Project Four DCO; and
- (B) in circumstances where the provisions are considered to interfere with the 'possessions' of Orsted in terms of A1P1 (by reference to their rights under the Interface Agreement), that the SoS would be entitled to establish that any such interference would be proportionate in the public interest, given the very strong public interest in preserving the full extent of the Endurance Store and so the delivery of the ECC plan.
- 2.5.5 Orsted also reference The Crown Estate's ("TCE") submissions, particularly with regards to the need to obtain TCE consent pursuant to s135(2) of the Planning Act 2008 in order to include bp's protective provisions in the Hornsea Project Four DCO. bp's response to such submissions, and the suggested way to proceed is set out in paragraphs 2.6 to 2.10 below.
- 2.5.6 Finally, Orsted note that bp's protective provisions (through the imposition of the Exclusion Area) may result in an increased WTG density in a smaller developable area outside of the Exclusion Area, which may lead to wake loss impact and ultimately a less competitive project in the Contract for Difference Auction Round

model. They also reference the potential implications of the same from a UK energy policy perspective in section 5 to their submission.

- 2.5.7 bp acknowledge such impacts/consequences are possible, and clearly the turbine size and layout would be primarily at Orsted's discretion as developer. However, Orsted have confirmed that such amendments to their scheme would not render their project unviable (in response to Question INF2.1 at Deadline 5, [REP5-074](#), electronic page 44). This is contrast to the counter-factual scenario where they are permitted to locate wind turbines in the Exclusion Area, which would lead to NEP not developing the Endurance Store in that area, leading to a circa 70% reduction in the available storage capacity, the ECC plan being rendered unviable and the loss of 10-11MTPA of CO2 injection capacity, greater than 50% of the Government's minimum CCUS capacity target for 2030 (as set out in the decision-making flowchart, Annex 8, REP6-046), electronic page 82).

### **Response to TCE's submissions**

- 2.6 bp notes TCE remain of the view that its consent, pursuant to section 135(2) of the Planning Act 2008 is required because the Interface Agreement and provisions relating to the same relate to Crown land ([REP6-066](#)).
- 2.7 bp notes that this submission was made without sight of the revised drafting proposed by bp in Version 4 of its protective provisions submitted at Deadline 6, which altered the approach taken in respect of the Interface Agreement ([REP6-046](#), electronic page 12). The drafting now expressly states that the protective provisions do not affect the rights or obligations as exist under the terms of the Interface Agreement, save in relation to the Carbon Entity's liability to the Wind Entity from under it, with such liability removed and replaced with an alternative compensation provision (paragraph 6). This drafting ensures that TCE's rights/interests under the Interface Agreement are now expressly preserved and not prejudiced in any way.
- 2.8 This revised approach was developed in acknowledgement of the submissions made by TCE (and Orsted) at Deadline 5 and sought to address the concerns expressed within them.
- 2.9 As a result, to the extent TCE consider that section 135(2) is otherwise engaged because of the nature of the Interface Agreement and its prevailing context to Crown land, bp would anticipate that TCE should be prepared to consent to the inclusion of the provision pursuant to s135. This could be provided on a 'without prejudice' basis to the merits of the technical submissions made by bp and Orsted into the examination, which will be determined by the SoS in due course. This would mean that any consent granted by TCE pursuant to s135(2) for the inclusion of the provisions put forward in bp's protective provisions would be contingent on the SoS finding in favour of bp's submissions on the need for such protective provisions.
- 2.10 If, alternatively, TCE is not prepared to grant consent pursuant to s135 on that without prejudice basis, it would be helpful to understand what remaining concerns TCE have that would prevent them from doing so. bp is liaising with TCE on this basis; however, given the proximity to the close of the examination, it may be this is a matter that the SoS needs to further consider in the decision-making stage.

### **3. THE NSTA TECHNICAL REPORT AND RESPONSE TO SEWELL'S RESPONSE TO BP'S SUBMISSIONS**

- 3.1 The NSTA Technical Report reviews the role of monitoring for offshore carbon storage sites, with a particular emphasis on those sites with restricted access owing to co-location with other marine industries, particularly offshore windfarms. Orsted submitted a copy of this report (along with a slide pack dated June 2022 and a slide pack dated 26 July 2022) prepared by the NSTA for discussions with industry participants and others interested in CCS and in wind farms) at Deadline 7 (Annexes 2 to 4), together with additional submissions made by Mr Sewell (Xodus) in response to bp's comments on his original report (Annex 1) ([REP7-087](#)).



- 3.2 bp's comments in respect of both the NSTA Technical Report and Sewell's additional submissions are included at Annex 2 to this response to Deadline 8.
- 3.3 As a general observation, bp notes that Orsted position the Sewell report and subsequent submissions as supplemental to the original technical evidence Orsted submitted in the form of the OREC/NZTC report (paragraph 4.1.1.3 of Orsted's response to Deadline 7). However, it is unclear to bp how it can be positioned as 'supplemental', when the reports are in conflict with one another in a number of core technical areas – as detailed by bp in its response to the Sewell Report at D6 (see, for example, paragraphs 2.3 to 2.16 of Annex 4 to the Deadline 6 response, [REP6-046](#), electronic pages 31 to 34). It is also noted that the authors of the original OREC/NZTC report did not wish to participate in the examination (as confirmed by Orsted at ISH9 and in their summary of oral case from the same (REP6-036, [electronic page 11](#)). In any event, and notwithstanding the inconsistencies/disagreement between Orsted's consultants, bp has responded to all aspects of both in this examination, including finally at Annex 2 to this response.
4. **VERSION 5 OF THE PROTECTIVE PROVISIONS**
- 4.1 bp has provided Version 5 of its proposed protective provisions (clean copy as Annex 4 and tracked-change version as Annex 5), to correct a minor cross-referencing error from the previous Version 4 submitted at Deadline 6.
- 4.2 No further edits have been made and the corresponding protective provisions plan remains as included as Annex 3 to the Deadline 6 submission ([REP6-046](#), electronic page 25).

**ANNEX 1**  
**LEGAL OPINION FROM JASON COPPEL QC**

**BP EXPLORATION OPERATING COMPANY LIMITED**

**NEP-HP4 INTERFACE AGREEMENT**

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**ADVICE**

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**Background**

1. I am instructed to advise BP Exploration Operating Company Limited (“**bp**”) in the matter of possible revisions to an “Interface Agreement” (“**IA**”) dated 14 February 2013 relating to an “Overlap Zone” of seabed. Agreements for lease which include the “Overlap Zone” have been made with the Crown Estate Commissioners (“**CEC**”) for the purposes of two different projects: the Northern Endurance Partnership (“**NEP**”), of which bp is the current operator, and Hornsea Project Four (“**HP4**”), the operator of which is Orsted Hornsea Project Four Ltd (“**Orsted**”). My advice is sought on the question of whether certain revisions to the IA which have been proposed by bp would be lawful if effected by a Development Consent Order (“**DCO**”) the terms of which are to be determined by the Secretary of State for Business, Energy and Industrial Strategy (“**the SoS**”), in particular having regard to any Convention rights of Orsted in the existing IA.
2. I am a practising barrister, specialising in public law and human rights. I have long experience of advising and representing a wide range of parties in public law and human rights matters, including central Government departments, both as a junior barrister, when I was a member of the Attorney General’s panels of civil Counsel, and since my appointment as Queen’s Counsel in March 2013. I have acted in a number of judicial review claims which raised the issue of whether any “possessions” within the meaning of Article 1 of Protocol No. 1 to the European Convention on Human Rights (“**A1P**”, “**ECHR**”) had been unlawfully interfered with, and represented the UK Government in Strasbourg proceedings on that question. I have recently advised the SoS and OFGEM on public law and Convention rights issues arising out of recent turmoil in the energy supply markets and currently represent OFGEM in Technology and Construction Court proceedings regarding the quantum of compensation which should be awarded to companies

which were unlawfully refused registration as biomethane producers under the non-domestic Renewable Heat Incentive Scheme.

3. The relevant factual background, as provided in my Instructions, may be summarised as follows:
  - (1) The NEP proposes to construct and operate a CO<sub>2</sub> transportation and storage system that will enable CO<sub>2</sub> from certain carbon capture projects on Teesside and the Humber to be transported to a geological storage facility in the 'Endurance' saline aquifer, a geological reservoir below the Southern North Sea seabed (the "**Endurance Store**"). The carbon capture projects across Teesside and the Humber which would be enabled by the NEP project are together known as the "East Coast Cluster" ("**ECC**") and represent almost 50% of the UK's current industrial cluster CO<sub>2</sub> emissions as defined by the SoS. The SoS selected the ECC for one of the UK's first two carbon capture, usage and storage ("**CCUS**") projects. The proposed plan for deployment of CCUS by the ECC ("**the ECC Plan**") will play a key role in reaching the UK's target of net zero emissions by 2050.
  - (2) HP4 is a proposal to develop an offshore wind farm of up to 180 wind turbine generators, together with associated offshore and onshore infrastructure, approximately 69km off the Yorkshire coast. A DCO application was made in respect of HP4 pursuant to the Planning Act 2008 ("**PA 2008**") in late 2021 and is currently undergoing examination.
  - (3) The area of seabed subject to the agreement for lease granted by CEC in relation to HP4 overlaps with the area of seabed subject to the agreement for lease granted by CEC in relation to NEP's development of the Endurance Store, giving rise to the Overlap Zone.
  - (4) It was originally anticipated that it would be possible for the HP4 and NEP projects to co-exist in the Overlap Zone. The IA was negotiated on that premise and makes provision for regulating and co-ordinating the parties' activities in an attempt to manage potential conflicts. However, after extensive analysis, bp and its NEP partners have now concluded that co-existence of the two projects across the Overlap Zone is not technically feasible. Put shortly, in the event that the HP4 DCO is granted in a form which permits wind infrastructure to be located across the entirety of the Overlap Zone, and CEC give their consent to that occurring (pursuant to §2 of the IA), the Endurance Store could only be developed outside of the Overlap Zone. On this scenario, the Endurance Store would only

achieve approximately 30% of its potential storage capacity, thereby rendering the ECC Plan unviable.

- (5) If the HP4 project were to be precluded from installing infrastructure in the Overlap Zone in order to ensure the delivery of the ECC Plan this could in principle constitute a “Material Adverse Effect (Pre-Operational)”, as defined in §1.3 IA, as giving rise to “Re-location costs” and/or “Re-programming costs”. The IA, as currently framed, provides for bp (as the “Carbon Entity” under the IA) to compensate Orsted (the “Wind Entity”) for such costs. In the case of Re-location costs, these would be calculated on the basis of *“the diminution in the market value of the Wind Entity’s project that will arise due to the loss of such infrastructure [from the Overlap Zone] or reduction in power output [as a result of infrastructure not being able to be located in the Overlap Zone] as the case may be”* (§1.3 IA). If the parties cannot agree on the amount of compensation which is payable, there is provision in the IA for this to be decided by a single expert, whose determination *“shall be final and binding upon the Entities except in the case of fraud or manifest error or failure by the Expert to disclose any interest or duty which conflicts with his functions under his appointment as Expert”* (§6.4.10).
- (6) At this stage, there is considerable uncertainty as to the amount of any compensation which may be required by the IA and so considerable risk to bp and other members of the NEP as to their potential liability to Orsted, as may be determined by the Expert. I am instructed that this risk, if unaddressed in the DCO, would likely lead to the NEP partners electing not to proceed with developing the Endurance Store in the Overlap Zone (with the consequences for the ECC Plan noted above).
- (7) bp has made proposals for the DCO currently under examination to revise the IA in order to mitigate the significant risk currently facing the NEP, and the ECC Plan. These proposals were, initially, for disapplication of the IA in its entirety; and more recently for removal of bp’s liability to Orsted under the IA and for a new regime whereby the SoS would assess and determine appropriate compensation for Orsted, taking explicit account of the need to preserve the deliverability of the full extent of the Endurance Store and so the viability of the ECC Plan. Orsted has resisted any changes being made to the IA, and has relied upon submissions drafted by James Maurici QC (“**JMQC**”) dated 8 June 2022 which argue that disapplication of the IA would be unlawful, as *ultra vires* s. 120(3) PA 2008 narrowly

construed and/or contrary to the Human Rights Act 1998 (“HRA”) as a breach of the A1P rights of Orsted.

4. I am asked to advise whether it would be lawful, including under the HRA, for the SoS to make provision in the DCO for revision of the compensation provisions of the IA. My conclusions, in summary, are as follows:

(1) On its ordinary meaning, and taking into account relevant common law principles of statutory interpretation, s. 120(3) PA 2008 read, in particular, with §3 of Schedule 5 to that Act, clearly provides the necessary *vires* for provision in the DCO which removes the current provision of the IA for payment of compensation by bp to Orsted.

(2) On the assumption that such provision would interfere with the “possessions” of Orsted (whether by “interference”, deprivation or control of use), there is good reason to think that the SoS could establish that any such interference would be proportionate in the public interest, given in particular the very strong public interest in the success of the ECC Plan. On that basis, there would be no breach of Article 1P and so no reason to read down s. 120(3) PA 2008 so as to preclude the action sought by bp.

#### **Vires to make provision in the DCO to disapply part or all of the IA**

5. Section 120 PA 2008 confers very broad discretionary powers upon the SoS to determine the contents of a DCO. A DCO may “*impose requirements in connection with the development for which consent is granted*” (s. 120(1)) and “*may make provision relating to, or to matters ancillary to, the development for which consent is granted*” (s. 120(3)). Examples of provision which may be made under s. 120(3) are included in Part 1 of Schedule 5 PA 2008 (see s. 120(4)). This includes, in §3 of Schedule 5, “*The abrogation or modification of agreements relating to land*” and, in §11, “*The imposition or exclusion of obligations or liability in respect of acts or omissions*”. With regard to §3, “land” is defined in s. 235 PA 2008 as including “*land covered with water*”.

6. It is, in my view, clear that the SoS has power to include provision in the DCO to prevent development by Orsted in the Overlap Zone (pursuant to s. 120(1)) and (pursuant to s. 120(3)) to modify the IA, which is an agreement relating to land covered with water, or even to abrogate it altogether. He could also exclude obligations or liability of bp, as the Carbon Entity under the IA, whether this is regarded as an agreement relating to land or simply as an agreement which

regulates the relationship between two projects and which gives rise to potential obligations or liabilities.

7. It has been argued on behalf of Orsted (in opposition to bp's original proposals) that s. 120(3) PA 2008 "*should not be construed as allowing for the overriding of contractual rights in a commercial agreement*" but "*should be interpreted narrowly and as not authorising the disapplication (deprivation) of valuable contractual rights absent any compensation*" (§48 of JMQC's Submissions). That argument is based on the premise (stated in §45 of the Submissions) that bp's proposals are founded only on s. 120(3) itself and not upon any provision of Schedule 5 PA 2008. In fact, as I have explained above, there is specific provision in §3 of Schedule 5 for the abrogation or modification of agreements relating to land covered by water, which does not impose any pre-condition of the payment of compensation. This is not, therefore, a case of general words being relied upon to found a power to modify contractual rights, but of specific provision which clearly covers what is proposed. The provisions of the PA 2008 are broad and clear enough to permit the SoS to disapply or abrogate the IA in its entirety (which was bp's former proposal) and *a fortiori* they are broad enough to permit the lesser step of removing the compensation provisions of the IA, and/or bp's liability under those compensation provisions. In my view, there is clear authority in the PA 2008 for the modification or abrogation of the IA by provision in the DCO and Orsted's argument to the contrary, insofar as it is based upon common law principles of statutory interpretation (see §47i-v of JMQC's Submissions), is wrong.
8. Orsted has placed some emphasis on the absence of direct and closely analogous precedent for making provision in a DCO such as that sought by bp. I understand that those instructing me have identified a previous DCO which made provision for the abrogation of contractual obligations imposed upon the developer in an agreement with the relevant local planning authority (see §52(6) of the Hinkley Point C (Nuclear Generating Station) Order 2013 (SI 2013/648)). This does represent an exercise of the power conferred by §3 of Schedule 5 PA 2008, albeit in different circumstances. However, it is of little or no relevance to the legal analysis, either for the purposes of *vires*, or under the HRA, that there is a dearth of previous cases where DCOs have modified or abrogated pre-existing contractual provisions. The current situation, of overlapping agreements for lease, and an agreement between developers to regulate that overlap, which was wrongly premised on the view that co-existence within the Overlap Zone was technically feasible, is genuinely unusual and one would not expect to see any previous case where similar facts have arisen or where similar provision has been made.

9. Orsted also contends – in §47vi of JMQC’s submissions - that s. 120(3) PA 2008 should be read down pursuant to s. 3 HRA so as to not to permit the modification of the IA, as such modification would contravene its rights under Article 1P. I agree that if the modification of the IA, or the exclusion of bp’s liability under it, did contravene Orsted’s Convention rights, it would not be open to the SoS to make such provision in the DCO. However, if there were a sufficient justification for any interference with Orsted’s Article 1P rights, the provisions of the PA 2008 need not be read down and, on their ordinary meaning, are amply sufficient to permit the SoS to include terms in the DCO for which bp has advocated. I turn now to consider the Convention rights argument in more detail.

### **The argument based on Orsted’s Convention rights**

10. Article 1P provides as follows:

*“Every natural or legal person is entitled to the peaceful enjoyment of his possessions. No one shall be deprived of his possessions except in the public interest and subject to the conditions provided for by law and by the general principles of international law.*

*The preceding provisions shall not, however, in any way impair the right of a State to enforce such laws as it deems necessary to control the use of property in accordance with the general interest or to secure the payment of taxes or other contributions or penalties.”*

11. I am asked to assume for the purposes of this issue that the clauses of the IA which make provision for bp to pay compensation to Orsted, in particular in the event of a “*Material Adverse Effect*”, represent a “possession” of Orsted within Article 1P. I make that assumption, noting the dictum of Coulson LJ in *Solaria Energy v Department for Business, Energy and Industrial Strategy* [2021] 1 WLR 2349, §34 that “*a signed and part-performed commercial contract is, prima facie, a possession*”. However, this would not be a straightforward case of contractual obligations being interfered with by legislation. On bp’s most recent proposals, the IA would continue in operation, save that bp’s potential liability to Orsted pursuant to its terms would be removed.
12. These and other points are also relevant to the question whether the removal of bp’s liability to pay compensation under the IA would deprive Orsted of any “possession” within the second sentence of Article 1P, or would merely interfere with the peaceful enjoyment of, or control the use of, any “possession”. The removal of a crystallised right to compensation of determined or predictable amount would more likely constitute a deprivation of a possession. The removal of



a right in principle to compensation which might be triggered in the future but whose value is currently indeterminate is more likely to constitute an interference with peaceful enjoyment or a control of use, *a fortiori* if that contingent right is replaced by an alternative compensation mechanism. As JMQC points out (in §40 of his submissions), citing *Mott v Environment Agency* [2018] 1 WLR 1022, the Courts do not deem it necessary to categorise a measure as a deprivation or a control of use. However, I would agree with the thrust of his argument, that the closer a measure is to a deprivation of possessions, the more seriously it is likely to be regarded by the Courts.

13. A very significant component of the question of whether there has been or would be a breach of Article 1P, which is not addressed in JMQC's submissions, is that of justification for interference. Any interference with possessions, whether within the first, second or third sentences of Article 1P, is in principle capable of justification as a proportionate measure in the public interest. Further, the Courts will afford a broad margin of discretion to a decision-maker seeking to justify a potential breach of Article 1P. According to long-established principles in the case-law of the European Court of Human Rights, an interference with possessions which is provided for in domestic law and pursues a legitimate aim will be held to be proportionate and so lawful unless it is "*manifestly without reasonable foundation*" – in other words, unless it is irrational (see, for example, *James v. United Kingdom* (1986) EHHR 123, §46). On that basis, provision in the DCO which amounted to an interference with Orsted's possessions, even one which – putting the matter at its highest – is tantamount to a deprivation of possessions, could be justified by the SoS, and so would be lawful, provided that it could be established to be rational. Rationality is traditionally a low threshold for a defendant to surmount in defending a decision challenged under public law.
  
14. The domestic courts have analysed the issue of proportionality of interference with Article 1P "possessions" as comprising four stages (see, recently, *Aviva Insurance Ltd & Anor v Secretary of State for Work and Pensions* [2022] 1 WLR 2753, §§77-85): (i) whether the objective of a measure is sufficiently important to justify the limitation of a fundamental right; (ii) whether the measure is rationally connected to the objective; (iii) whether a less intrusive measure could have been used; and (iv) whether, having regard to these matters and to the severity of the consequences, a fair balance has been struck between the rights of the individual and the interests of the community. There has been some fluctuation in the case-law as to whether the "*manifestly without reasonable foundation*" test applies at all stages of the proportionality analysis, or only at the first three stages. The latest position, as explained in *Aviva*, appears to

be that “*manifestly without reasonable foundation*” is the governing test at all stages, but that certain factors may serve to increase the intensity of review within the framework of that test, such as where the interference with Convention rights involves discrimination on a suspect ground (see §84 of *Aviva*). Generally, however, and in the absence of special factors, judgments of a Minister in the field of social or economic policy will attract a wide margin of appreciation, or a low intensity of review.

15. Against that background, the key question for the SoS is whether provision in the DCO modifying the IA so as to remove Orsted’s potential entitlement to compensation would be defensible as a proportionate interference with “possessions”. In my view, and subject of course to the facts which are accepted by the SoS, there is good reason to think that proportionality, and so justification of interference, could be established in this case (whether that “interference” is properly to be analysed as an interference *stricto sensu*, a deprivation or a control of use of possessions).
16. The objective of removing Orsted’s potential entitlement to compensation from the IA would be to ensure the progress and success of the ECC Plan. As I have noted in §3(7) above, bp’s position is that the risk of a significant potential compensation liability arising from the IA would likely lead to the NEP partners electing not to proceed with developing the Endurance Store within the Overlap Zone, so rendering the ECC Plan unviable. The ECC Plan is of enormous significance to the UK’s strategy for achieving Net Zero (in accordance with the targets set under the Climate Change Act 2008) and the objective of ensuring that it proceeds is plainly important enough to warrant interference with Convention rights. There would, moreover, be an obvious connection between the provision sought by bp and this legitimate objective. It follows that stages (i) and (ii) of the proportionality test would be satisfied.
17. As to stages (iii) and (iv) of the proportionality test:
  - (1) The judgment of the SoS would attract a broad margin of discretion. Ensuring the future progress of the ECC Plan is a matter of social and economic policy and, in my view, there are no special factors, such as discrimination on a suspect ground, which would serve to narrow the “*manifestly without reasonable foundation*” test in this case.
  - (2) The starting point would then be the very strong public interest in ensuring that the ECC Plan was able to proceed and to achieve its objectives. If the SoS were satisfied that

modification of the IA were necessary to this end, that would go a very long way towards him establishing the necessary rational basis for the action proposed by bp.

- (3) HP4 will also make a contribution to energy sustainability and security and to achieving net zero, but there has been no suggestion that the project will become unviable and could not proceed in the event that Orsted were excluded from the Overlap Zone without payment of compensation pursuant to the IA. Orsted has an understandable commercial interest in receiving compensation, but this is a private and not a public interest to which the SoS may legitimately attribute much less weight than he attributes to the public interest in the ECC Plan. The net result may well be that certain losses fall on Orsted which it would have expected to pass on to the NEP, but given the DCO process, the need for consent of CEC to the location of infrastructure and the complexity added by the Overlap Zone, there was always significant commercial uncertainty surrounding Orsted's plans. The HP4 project remains, nevertheless, an attractive and lucrative one. In those circumstances, the SoS may rationally take the view that a reduction in Orsted's profitability or in the value of the HP4 project is justified in the interests of the ECC Plan proceeding.
- (4) Orsted's legal submissions have placed much weight on the IA being a commercial agreement which bp freely entered into in the relatively recent past. That is of course true, but the full context is that bp was effectively required to succeed to the IA given the obligations assumed under §8 of the IA ("Succession") by the previous Carbon Entity and, as I understand it, the IA was originally negotiated and entered into on the basis of an expectation that the two projects could co-exist within the Overlap Zone. Having done substantial further investigation, bp's technical conclusions are different, and rule out co-existence, and if the SoS were to accept them, that would go to undermining a key premise for the original IA, and for bp succeeding to it.
- (5) Orsted has also contended that it must be compensated for any loss of rights under the IA. It would of course make no sense for the SoS to remove the potential liability to Orsted under the IA whilst making fresh provision for the same or similar compensation to be paid by the NEP outside the framework of the IA. If the SoS accepts the need to remove the existing compensation provisions from the IA, this must be on the footing that compensation will only be payable to Orsted on a less favourable and more certain basis, in order to ensure the progress of the ECC Plan.

- (6) As a matter of general principle, it is certainly not a condition for establishing proportionality of interference under Article 1P that compensation is paid, even where the interference is properly analysed as a straightforward deprivation of possessions (see, for a recent example of justification being made out where no compensation was paid, *R (Durand Education Trust) v Secretary of State for Education* [2021] ELR 213). That must be the case where the interference in question is the removal of a potential entitlement to compensation (since payment of compensation for this removal would fatally undermine the objectives of the measure).
- (7) Therefore, if the SoS is satisfied in principle of the need for removal of bp's potential liability to Orsted under the IA, it will be a matter for his rational judgment whether and to what extent to replace that liability with another compensation mechanism. That judgment will depend, critically, upon the view which he takes of the current risk to the ECC Plan, and of the strength of the public interest in that project proceeding as well as his opinion as to the weight which is to be attributed to Orsted's commercial interests in maximising the profitability of HP4. I see no legal obstacle to the SoS reaching a rational conclusion to give effect to the proposals made by bp. In those circumstances, proportionality and so justification would be established and there would be no breach of Orsted's Article 1P rights.

## **Conclusions**

18. In summary, therefore, I have concluded:

- (1) On its ordinary meaning, and taking into account relevant common law principles of statutory interpretation, s. 120(3) PA 2008 read, in particular, with §3 of Schedule 5 to that Act, clearly provides the necessary *vires* for provision in the DCO which removes the current provision of the IA for payment of compensation by bp to Orsted.
- (2) On the assumption that such provision would interfere with the "possessions" of Orsted (whether by "interference", deprivation or control of use), there is good reason to think that the SoS could establish that any such interference would be proportionate in the public interest, given in particular the very strong public interest in the delivery of the ECC

Plan. On that basis, there would be no breach of Article 10 and so no reason to read down s. 120(3) PA 2008 so as to preclude the action sought by bp.



**JASON COPPEL QC**



**15 August 2022**

**ANNEX 2  
BP'S COMMENTS ON THE NSTA REPORT AND RESPONSE TO SEWELL FURTHER  
SUBMISSIONS**

## ANNEX 2

### BP'S COMMENTS ON THE NSTA REPORT AND RESPONSE TO SEWELL FURTHER SUBMISSIONS

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#### 1. OVERVIEW

- 1.1 Orsted's Deadline 7 submission ([REP7-087](#)) includes as Annex 1 a 7 August 2022 report by Andrew Sewell (the "August Sewell Report") responding to Annex 4 of the Deadline 6 submission by BP Exploration Operating Company Limited ("bp") ([REP6-046](#), electronic page 27). bp addresses the August Sewell Report in Appendix 1 of this Annex.
- 1.2 bp also addresses below the North Sea Transition Authority's July 2022 Technical Report entitled "Measurement, Monitoring and Verification (MMV) of Carbon Capture Storage (CCS) Projects with Co-Location considerations" (the "NSTA's Technical Report"), which was included as Annex 4 to Orsted's above-referenced Deadline 7 submission, together with:
- 1.2.1 Energy Integration Project Phase 3 Spatial Co-Location Project, NSTA, June 2022 ("NSTA, June 2022") (Annex 2 to Orsted's Deadline 7 Submission); and
- 1.2.2 CCS MMV & Spatial Co-Location Project, NSTA, 26 July 2022 ("NSTA, July 2022") (Annex 3 to Orsted's Deadline 7 submission).
- 1.3 bp notes that:
- 1.3.1 although the NSTA published its Technical Report on 1 August (prior to Mr Sewell completing his August report) and Orsted's submission states that the Sewell August Report is "*supported by*" the NSTA Technical Report, in fact, Mr Sewell does not reference or discuss the NSTA's Technical Report in his August Report. Instead, he only references the NSTA, June 2022 and NSTA, July 2022 documents, which he describes (at page 4) as "*two versions of the NSTA co-location slide pack*"; and
- 1.3.2 Orsted's submission does not discuss or cite anything in the NSTA Technical Report or explain how it "*supports*" the August Sewell Report.
- 1.4 The two slide packs referenced in the August Sewell Report are documents prepared by the NSTA for purposes of discussions held with various members of industry and others involved in CCS and offshore wind (including Orsted and bp). Unlike the NSTA Technical Report, the slide packs Mr Sewell refers to are not available on the NSTA's website (and bp notes the slide packs Mr Sewell refers to contain materials that are not in the NSTA Technical Report). bp understands that the NSTA Technical Report on the NSTA's website (which is the slide pack document labelled "TECHNICAL REPORT" and described as "A technical study on the Monitoring, Measurement and Verification (MMV) Activities with reference to the co-existence of Offshore Carbon Capture Storage, Wind and Oil/Gas Projects", as included as Annex 4 to Orsted's above-referenced Deadline 7 submission) to be the document containing the NSTA's findings concerning the study it undertook and guidance it has decided to provide at this stage in respect of co-location of offshore CCS and windfarm projects with the NSTA describing the document and its work as follows:

***"This document represents an internal NSTA technical study into the role of MMV for CCS sites, with a particular emphasis on those sites with restricted***

access owing to co-location with other seabed infrastructure users (e.g. windfarms). **It is intended to provide both high level industry guidance and detailed examples of the type of technology to be considered around a CCS site**” (emphasis added)

and

**“Project Scope**

***The primary objective of this project was to identify and scope specific issues associated with offshore geological/geophysical surveying and monitoring activity.***

**Technical Study Aims**

***Provide a general view of MMV activities for carbon storage sites in proximity to offshore wind farms. It is not specific to any particular carbon storage site, Offshore Windfarm, or Oil/Gas project, however, individual project developers contributed key learnings and insights from existing and planned projects.***

- *Build on work undertaken by the OGA/NSTA-led Energy Integration Project and with The Crown Estate’s ‘Project Vulcan’, covering generic CCS vs Offshore Wind engineering interactions. (Reference 1)*
- ***While this project identified potential solutions, the intent was to identify further studies that could provide more detailed recommendations or actionable results in support of industry and regulatory activities. (emphasis added)***

**Report Method**

*This report is largely based upon insights gleaned and distilled from ~ 30 meetings with a selection of over 20 relevant and interested parties in early 2021*

- *Parties ranged over oil and gas operators and others with CCS licenses/leases (or an intent to enter this market), seismic/geophysical contractors, site survey contractors, academia, other regulatory/government bodies, geophysical service analysis providers, wind farm operators, suppliers of novel geophysical acquisition and processing techniques.*
- *Whilst not every possible interested party was consulted, it is believed that a fair cross-section of views was likely sampled.*
- *This MMV report was revised, prior to public release, after a subsequent 2022 project considering OBN technology.”*

1.5 bp believes the NSTA’s published Technical Report is the appropriate document to refer to when discussing the NSTA’s work and guidance relating to MMV of CCS projects that have co-location/co-existence (used interchangeably in this context) considerations. Accordingly, in this submission, bp addresses aspects of the NSTA’s Technical Report that are relevant to the technical submissions that have been made in the HP4 DCO examination process. bp would of course be happy to provide such further clarification or information as the ExA, or in time the SoS, may consider helpful or necessary to assist their recommendation/determination.

1.6 Additionally, in Appendix 1 to this Annex, bp has provided additional comment where considered necessary in response to the August Sewell Report.

**2. CO-EXISTENCE IS NOT FEASIBLE IN THE ENTIRETY OF THE OVERLAP ZONE**

2.1 bp does not intend to repeat in this submission the comprehensive explanation it has provided in its prior submissions of why having wind turbines in the Exclusion Area would make the ECC plan unviable. However, it draws the Examining Authority’s attention to the



following two fundamental reasons why it would not be feasible to have wind turbines in the Exclusion Area:

- 2.1.1 it would mean the combined access requirements for Endurance could not be satisfied in terms of:
- (A) helicopter access for routine and emergency purposes;
  - (B) access for drilling rigs (for drilling new wells and for maintenance of existing wells);
  - (C) access to drill (if necessary) relief wells;
  - (D) access to other seabed infrastructure (e.g. for maintaining pipelines on the seabed); and
- 2.1.2 would prevent NEP from using towed streamers to acquire the 3D seismic data that is needed to provide the quality of data necessary to evidence CO<sub>2</sub> migration and settlement and thereby ensure conformance and containment of the CO<sub>2</sub> plume.
- 2.2 The NSTA Technical Report addresses both of these issues, and although its findings are not specific to a particular CCS site and therefore are general in nature, what the NSTA Technical Report states in relation to these particular issues is consistent with and supports what bp and its NEP partners have concluded in the context of Hornsea 4 and the Endurance Store. The relevant findings by the NSTA include the following statements in the Executive Summary found on slide 4 of the report:

***“Executive Summary***

...

*Seismic is the key geophysical monitoring technology providing best resolution. Surveying activities for carbon storage sites in and **around offshore windfarms** can be extremely challenging, and **unacceptable collision risk if deploying long towed seismic streamers (receivers)**. There are some potential mitigating solutions (e.g. Ocean Bottom Nodes (OBN), although with higher cost and more limited coverage.*

...

***Periodic access to Carbon Storage infrastructure within Offshore Windfarms is a more significant obstacle.*** *The siting of platforms and wells with their associated access requirements for routine and emergency operations requires sufficient stand-off. **Consequently, largely overlapping carbon storage sites and wind farms<sup>1</sup> are presently considered not to be feasible with current technology.***

...”

**Wind Turbines in the Exclusion Area would affect the Access Requirements for Endurance**

- 2.3 In finding that periodic access to carbon storage infrastructure within an offshore windfarm is a “*significant obstacle*” and that “*Consequently, largely overlapping carbon storage sites and wind farms are presently considered not to be feasible with current technology*”, the NSTA Technical Report identifies and discusses a number of “*operational scenarios*” which take account of various activities typically required for a CCS project operating in a marine environment, which include issues addressed in bp’s report “A Technical Assessment of

<sup>1</sup> The Exclusion Area included in bp’s protective provisions accounts for ~45% of the Endurance store seabed area and ~25% of the H4 developable seabed area.

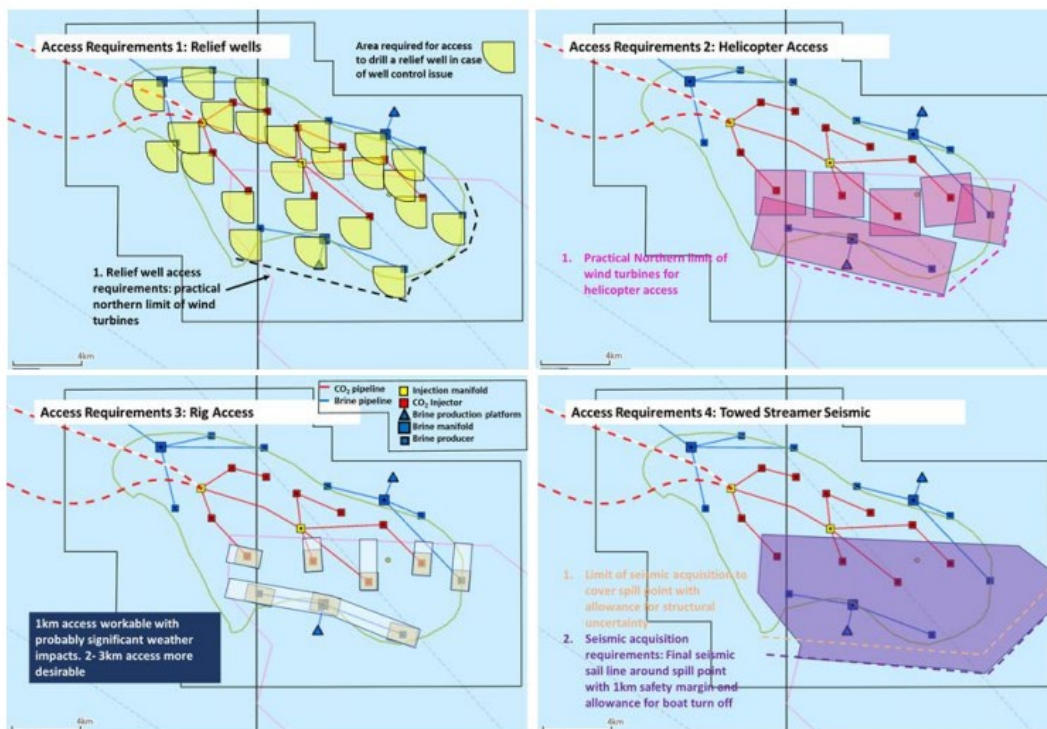
the Endurance Reservoir and Hornsea Project Four Wind Farm” (the “bp Technical Assessment “) submitted in this DCO examination process as part of the Joint Position Statement of Orsted and bp submitted at Deadline 1 such as support vessels, well heads, aviation and temporary installations.<sup>2</sup> The NSTA’s comments, which are consistent with bp’s discussion of specific access requirements for Endurance, include the following (on Slide 13):

“

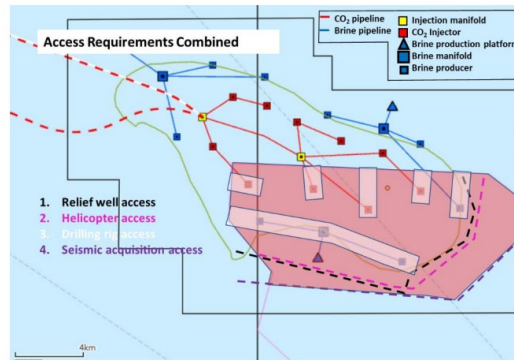
- All operation types require vessel and aviation support/supplies.
- CCS or Oil/Gas operations require the drilling of wells, initially with temporary installations, but with fixed surface installation or subsurface equipment during injection/production.
- Wells require a clear zone around them for maintenance and emergency operations, including the drilling of relief wells and final abandonment.”

2.4 The NSTA also notes (Slide 15) that the details of aviation constraints were beyond the scope of its study and states that this requires further engagement with the CAA (Civil Aviation Authority). The NSTA identifies a number of topics for a consultation with the CAA. Again, this includes various factors that bp considered in its Technical Assessment, including SAR (Search and Rescue Operations) in the event of an emergency and long term access to well and seabed infrastructure.

2.5 bp previously explained in detail why and how access requirements are necessary for developing and operating the Endurance Store and why, as a result, co-existence in the Exclusion Area is not feasible. This is illustrated in bp’s Technical Assessment Report ([REP1-057](#), section 9 (Figures 36/37), p.201) by showing the individual requirements and combined impact on the Exclusion Area (extracts shown below).



<sup>2</sup> See Section 7.1 of bp’s Technical Assessment Report submitted at Deadline 1 ([REP1-057](#), electronic pages 175 to 188) and Slides 12, 13 and 15 in the NSTA Technical Report (Annex 4 of Orsted’s Deadline 7 submission, ([REP7-087](#)))



All five diagrams show clearly that the combined area required for each of these operational activities results in there being no ability to locate any turbines within the Exclusion Area.

- 2.6 The specific access related problems that bp has identified in respect of Endurance reflect, and are consistent with, the NSTA’s general finding that the operational activities required at a carbon storage site mean that currently largely overlapping carbon storage sites and wind farms are not considered to be feasible.<sup>3</sup>
- 2.7 As explained in bp’s Deadline 6 submission, the evidence before the Examining Authority does not support finding that the rig, wells and helicopter access requirements at Endurance could be satisfied if there are wind turbines in the Exclusion Area.<sup>4</sup> Instead, the evidence from bp, and findings of the NSTA, establish that in fact wind turbines in the Exclusion Area would impact access requirements by posing such a “*significant obstacle*” to accessing Endurance infrastructure that it would not be feasible for Endurance and Hornsea 4 to co-exist in the Exclusion Area.

**Wind Turbines in the Exclusion Area Would Prevent NEP Using Towed Streamers**

- 2.8 In considering various operational scenarios and reaching its view that long towed streamers cannot be used to acquire seismic data within a windfarm, the NSTA states (see slide 17):

**“Operational Scenarios – Seismic Surveys**

- *Seismic surveys remain the primary geophysical tool of choice for imaging the subsurface.*
  - *Essential for managing the geometry and extent of storage sites and complexities which underpin dynamic fluid prediction models.*
  - *A high-quality baseline survey is expected for all CO2 Storage Sites, since this data will be used for decades beyond post-closure*
  - *Seismic Acquisition parameters will depend on the subsurface scenarios that need to be addressed*
  - *Reprocessed old surveys (> ~ 15 years) are unlikely to adequately address risks.*

<sup>3</sup> In the August Sewell Report, Mr Sewell states that he was not instructed to address the access requirements for Endurance. Therefore, the position remains as set out by bp in its Deadline 6 submission (sub-paragraphs 2.17.4 and 2.17.6). Specifically: (i) the Sewell Report does not address what bp said (in its Technical Assessment and its Deadline 3 submission) about access requirements; (ii) the OREC/NZTC report fails to take account of both bp’s Technical Assessment and the specific access requirements that will exist at Endurance; and (iii) Mr Sewell has not addressed the analysis of access requirements in the OREC/NZTC report or taken issue with or disagreed with bp’s submissions concerning access requirements.

<sup>4</sup> See paragraph 2.17 of Annex 4 to bp’s Deadline 6 submission ([REP6-046](#), electronic pages 34-35)

- *Streamer surveys are lower cost, but use of **long streamers are impossible** close to & within dense turbine infrastructure*
- *Ocean Bottom receivers (nodes) surveys are available at a much higher cost. They can be deployed within infrastructure, if seabed conditions are conducive. A high specification/more manoeuvrable (dynamically positioned) seismic source boat is still required.*

...

2.9 The NSTA Technical Report also contains the following statement in the section of the report discussing “Seismic Options Around Offshore Windfarms”:

**“Co-existence using reservoir towed streamer is not considered safe nor practicable.” (Slide 25)**

2.10 The NSTA’s statements about it not being safe, practicable or possible to use long towed streamers “close to & within dense turbine infrastructure” are consistent with bp’s conclusion in the bp Technical Assessment Report (submitted at Deadline 1 (REP1-057), as referenced above) that if there were wind turbines in the Exclusion Area, NEP could not use towed streamers to acquire the necessary seismic data. Additionally (and as explained in bp’s Deadline 6 submission):

2.10.1 in the July 2022 report by Mr Sewell submitted by Orsted at Deadline 5 (the “Sewell Report”), he agreed with bp’s position that: (i) in the event there was co-location in the Exclusion Area, NEP could not use conventional towed streamers to acquire seismic data for CO<sub>2</sub> monitoring; and (ii) this would be the case even with a sparser layout of a 2x2km grid formation;

2.10.2 Mr Sewell also agrees with bp’s conclusion that it could not use short streamers of 200m or less for acquiring seismic if wind turbines were present in the Exclusion Area;<sup>5</sup> and

2.10.3 accordingly, the evidence before the Examining Authority does not support finding either that a grid formation of 2x2km would allow co-location in the Exclusion Area or that NEP could use short streamers of less than 200m to acquire seismic data in the event wind turbines were present in the Exclusion Area.

**The Seismic Monitoring Requirements NEP Must Satisfy for the Endurance Store**

2.11 A comprehensive MMV programme for all CCUS projects, including the NEP project, is required to establish that injected CO<sub>2</sub> behaves as predicted in the reservoir and to verify that the CO<sub>2</sub> remains safely contained within the store both during injection and after closure of the project. Monitoring must therefore be able to detect any unexpected behaviour of the CO<sub>2</sub> plume and possible migration out of the CO<sub>2</sub> store.

2.12 As explained in bp’s Technical Assessment Report (As above, REP1-057, paragraph 7.3.1, electronic page 190), injection of CO<sub>2</sub> into the Endurance aquifer is expected to produce a clear signal using 4D seismic monitoring. Thus 4D seismic is a critical component of the MMV strategy for the NEP project.

2.13 As noted in bp’s Deadline 6 submission ([REP6-046](#), paragraph 2.5.1, electronic page 31), the Sewell Report agrees with bp’s conclusion that it is necessary to use 3D/4D seismic for NEP’s MMV plan, with Mr Sewell stating that “it is unlikely that there will be a replacement technology for 3D seismic with the availability (sic) to provide monitoring over the whole

<sup>5</sup> See also paragraphs 2.11-2.12 of Appendix 1 to this Annex where bp addresses Mr Sewell’s comment in his August report that he believes that although P-cables on their own could not be used at Endurance, using a hybrid of P-cables and OBN might enable co-existence in the Exclusion Area.

*areal extent of a CO<sub>2</sub> storage site for a long time. The use of 3D/4D seismic in the MMV plan for Northern Endurance is a necessity.”*

- 2.14 The NSTA also recognises the important role seismic monitoring plays in MMV plans for offshore CCS projects, with the NSTA Technical Report stating that “*seismic monitoring [is] expected to provide [a] critical role in MMV strategy*” for projects injecting CO<sub>2</sub> into an aquifer (slide 21) and that “*4D (Time Lapse 3D) seismic remains the principal, proven, reliable monitoring method supporting... Conformance/Reservoir management... [and] ...Containment*”<sup>6</sup> (slide 22).<sup>7</sup>
- 2.15 The NSTA also notes that “*seismic monitoring [is] reliant upon consistent, repeatable acquisition & careful processing*”.<sup>8</sup> bp fully agrees with this statement, and has explained in the bp Technical Assessment and its prior submissions in this DCO examination process how bp has applied this paramount need to acquire consistent, reliable and repeatable seismic data to its review and assessment of potential ways of undertaking seismic monitoring of the Endurance store.
- 2.16 The agreement between bp and Mr Sewell that 3D/4D seismic has to be used in the MMV plan for NEP means the two seismic technologies that could be considered for use in Endurance’s MMV strategy are: (i) towed streamer; and (ii) OBN.
- 2.17 In relation to the use of towed streamer, as explained above:
- 2.17.1 the NSTA recognises that it is not safe, practicable or possible to use long towed streamers to acquire seismic data close to or within an offshore windfarm; and
- 2.17.2 bp and Mr Sewell agree that it would not be possible to use long or short towed streamers for the NEP MMV plan.<sup>9</sup>

**Using OBN or a hybrid of OBN and P-cables to acquire seismic data at Endurance would not enable co-existence in the Exclusion Area**

- 2.18 In terms of using OBN, or a hybrid of OBN and P-cables, to acquire seismic data at Endurance, bp has explained in detail in the bp Technical Assessment and its Deadline 5a ([REP5a-025](#)) and 6 ([REP6-046](#)) submissions why it would not be possible to do this if there are wind turbines in the Exclusion Area.<sup>10</sup>
- 2.19 In particular:

<sup>6</sup> In discussing seismic monitoring for CCS, the NSTA refers to two examples of “direct CO<sub>2</sub> seismic Detection”. The first is Sleipner, where CO<sub>2</sub> is injected into an aquifer in the Norwegian section of the North Sea (and bp addressed Sleipner in Section 7.3.4 of the bp Technical Assessment, paragraph 2.34 of bp’s Deadline 3 submission, Section 4 of bp’s Deadline 5a submission and paragraphs 4.47 – 4.52 of bp’s Deadline 6 submission). The second example that the NSTA refers to is Ketzin. It is an aquifer CO<sub>2</sub> injection project in Germany. However, it is an onshore project.

<sup>7</sup> bp notes that the NSTA states (see slide 35) that “*seafloor PRM is likely to exacerbate the coexistence issue and is unlikely to have a significant role in congested areas*” as well as the fact that it will “*prevent CCS subsea development / windfarm expansion*” and has “*very high upfront capital expenditure*”. The NSTA also states (slide 25) that an “*alternative P-Cable arrangement still does not present full spatial data*” and that “*2.5D monitoring gives very limited image*”. Lastly, “*non-seismic geophysical remote sensing techniques can complement, but are unlikely to replace active seismic acquisition*” (slide 19).

<sup>8</sup> Slide 23 of the NSTA Technical Report (Annex 4 of Orsted’s Deadline 7 submission, ([REP7-087](#)))

<sup>9</sup> See paragraphs 2.11-2.12 of Appendix 1 to this Annex where bp addresses Mr Sewell’s comment in his August report that he believes that although P-cables on their own could not be used at Endurance, using a hybrid of P-cables and OBN might enable co-existence in the Exclusion Area.

<sup>10</sup> bp notes that the NSTA states (see Slide 20) that “*Seismic Streamer surveys remain the obvious choice where clear water access is available (i.e. there is no windfarm anticipated over CCS site)*”. This is consistent with bp’s conclusion that provided there are no wind turbines in the Exclusion Area, towed streamer should be used to acquire seismic data for Endurance.

- 2.19.1 although OBN and P-cables are used to acquire seismic data for offshore oil and gas projects:
- (A) A hybrid of OBN and P-cables have not been used for 4D monitoring of an oil and gas project;
  - (B) OBN has not been used for seismic monitoring of an offshore CCS project;
  - (C) P-cables have not been used for seismic monitoring of an offshore CCS project;
  - (D) a hybrid of OBN and P-cables has not been used for seismic monitoring of an offshore CCS project;
  - (E) OBN has not been used to acquire seismic data in a windfarm;
  - (F) P-cables have not been used to acquire 3D seismic data in a windfarm<sup>11</sup>;
  - (G) a hybrid of OBN and P-cables has not been used to acquire seismic data in a windfarm; and
  - (H) a hybrid of OBN and P-cables has not been used for 4D seismic monitoring of a CCS project in a windfarm.
- 2.19.2 Accordingly, although OBN and P-cables are “proven” technologies in the context of acquiring 3D seismic data for oil and gas projects, currently there is no example of them being used to acquire seismic data in an offshore CCS project to enable CCS project operators to ensure containment and conformance of a CO<sub>2</sub> plume. In that sense, OBN and P-cables (and a hybrid of the two) are unproven technologies for the purpose of monitoring CCS projects, and particularly inside of a windfarm;
- 2.19.3 Mr Sewell and OREC/NZTC do not claim that NEP could or should use OBN, P-cables or a hybrid of the two technologies to acquire seismic data at Endurance:
- (A) as explained in bp’s Deadline 3 submission, the OREC/NZTC report:
    - (1) does not conclude that co-location within the Overlap Zone is, in fact, feasible;
    - (2) does not conclude that (in the event there were wind turbines in the Exclusion Area) it would be appropriate to use OBN technology for monitoring purposes in the Exclusion Area;
    - (3) does not confirm that (in the event there were wind turbines in the Exclusion Area) there are monitoring technologies that would be provide the degree of quality and repeatability of seismic data and imaging that bp and its NEP co-venturers need in order to satisfy operator and regulatory obligations;
    - (4) does not offer any solution(s) that OREC/NZTC has determined would, if implemented, overcome the Overlap Zone related

<sup>11</sup> bp notes that Slide 27 of the NSTA Technical Report states “NSTA is aware of only one, carefully planned field example of intra-windfarm 2D HR survey acquisition.” bp understands this to be the testing that was done at Ormonde windfarm and referred to in the OREC/NZTC report ([REP1-057](#), Appendix 1.1, sections 3.5-3.6, electronic pages 58-63). As explained in bp’s Technical Assessment ([REP1-057](#), Annex 1 of Appendix 2, section 7.3.2, electronic page 193), 2DHR cannot be used for seismic monitoring at Endurance.

challenges currently facing the NEP and Hornsea 4 projects;<sup>12</sup>  
and

- (B) as explained in bp's Deadline 5 and 6 submissions, all Mr Sewell does is recommend that modelling and field trials be undertaken as part of assessing whether, in the event there were wind turbines in the entirety of the Overlap Zone, a hybrid of OBN and P-cables could be used at Endurance;
- 2.19.4 for the reasons explained in bp's Deadline 5a and 6 submissions, the modelling and field trial exercise recommended by Mr Sewell will not enable co-existence in the Exclusion Area;
- 2.19.5 it also is not necessary to undertake the time consuming and costly type of modelling and pre and post modelling field trial exercise that bp has explained (in its D5a and D6 submissions) would need to be undertaken to determine whether a hybrid of OBN and P-cables might be able to be used for monitoring if there were wind turbines in the Exclusion Area<sup>13</sup> as:
- (A) bp previously considered the feasibility of using OBN and P-cables for NEP's MMV plan for Endurance and determined that using OBN (even dense OBN) would still lead to there being significant gaps in offset coverage which would prevent NEP from imaging the complete Endurance store (and that would be the case even if it was possible to acquire seismic data as close as 100m from wind turbines<sup>14</sup>);
  - (B) bp would not be willing to put forward to the NSTA a MMV plan for the NEP project that included a hybrid of dense OBN and P-cables as the monitoring component for the Endurance store because of insufficient certainty that it would provide a workable solution in practice either: (i) for predicted conditions or (ii) for unexpected circumstances where critical corrective measures are required or additional monitoring is needed;
  - (C) undertaking modelling and field trial work would serve no purpose because the rig, well and helicopter access requirements identified by bp mean there could not be co-existence in the Exclusion Area.
- 2.20 The NSTA Technical Report refers to OBN, and in discussing "Seismic Options around Offshore Windfarms" states (in Slide 25) that "*Ocean Bottom nodes (OBN) could be deployed amongst turbines.*" In considering this statement, it is important to take account of the following:
- 2.20.1 the NSTA does not say that OBN could or should be used for MMV of CCS projects in a windfarm. It simply says that using OBN is a "*potential monitoring acquisition option*";
  - 2.20.2 the NSTA recognises that as OBN seismic surveys have never been acquired within a windfarm (slide 27), field trials will be necessary (slides 50-51) before the

<sup>12</sup> See sections 1 and 5 of bp's Response to the OREC/NZTC Report ([REP3-047](#), Appendix 1, electronic pages 8-11 and 33-36)

<sup>13</sup> In paragraphs 2.16-2.23 of Appendix 1 of this Annex, bp addresses Mr Sewell's comment in his August report that what bp is proposing is more extensive than what he suggests occur.

<sup>14</sup> Although this is suggested in the Sewell Report, as explained in paragraph 8.21 of bp's Deadline 5a submission and paragraph 4.7.2 of Annex 4 of its Deadline 6 submission, bp does not consider that it would, in fact, be possible to do so. bp notes that even if it were possible to do so, acquiring seismic as close as 100m still creates a 200m data gap. bp notes that Slide 3 of the NSTA Technical Report includes a diagram depicting a 200m gap of seismic data. However, the NSTA does not explain the basis on which it believes vessel owners and operators would, taking account of safety requirements, in fact be able to acquire seismic data as close as 100m from a turbine.

technology can be recognised as being proven and feasible for use as a monitoring tool for co-location projects. This is not surprising given the fact (as explained above in paragraphs 2.18.1 and 2.18.2) that currently OBN technology is not proven for seismic monitoring of an offshore CCS project in a windfarm.

- 2.20.3 in an earlier section of its report where the NSTA discusses seismic surveys generally, the NSTA expressly recognises that deploying OBN within infrastructure is dependent on seabed conditions (and as explained below in paragraph 2.20.5 also involves operational/logistical considerations):

**“Operational Scenarios – Seismic Surveys**

- *Seismic surveys remain the primary geophysical tool of choice for imaging the subsurface*

...

- *Ocean Bottom receivers (nodes) surveys are available at a much higher cost. They can be deployed within infrastructure, if seabed conditions are conducive. A high specification/more manoeuvrable (dynamically positioned) seismic source boat is still required.” (Slide 17)*

- 2.20.4 The importance of seabed conditions being conducive to using OBN around the infrastructure of an offshore oil and gas project applies equally to the potential use of OBN within a windfarm, and as previously explained bp has determined that the strong tidal currents and sand waves present on the seabed in the Exclusion Area means there likely would be significant problems in using the dense layout of OBN that would be needed to obtain the necessary seismic data at Endurance;

- 2.20.5 The NSTA recognises that there are various fundamental challenges that the OBN monitoring method would need to overcome to prove it is feasible for operations within a windfarm, including (Slide 30):

- (A) Deployment speed / risk of completing survey in a single season;
- (B) Safety considerations for OBN vessel operations (*‘HR contractors currently hesitant to commit to minimal HR scope (any more than 1 x 600m cable) between turbines’*);
- (C) Multiple vessels required (exacerbates operational issue);
- (D) Data coverage gaps at the seabed and shallow section; and
- (E) High cost is a significant factor,

bp addresses in its Deadline 6 submission ([REP6-046](#)) why these factors preclude the use of OBN as a means of facilitating co-existence between Endurance and Hornsea Project Four.

- 2.20.6 the NSTA Technical Report does not address the extent to which the gaps in seismic data that would result from using OBN within a wind farm may mean that it would not be feasible to use OBN in a particular CCS and windfarm overlap situation. Instead, the NSTA notes in its Executive Summary (Slide 4) that there could be more limited coverage if OBN is used and identifies coverage gaps as one of the “negatives” of using OBN to acquire seismic data within a windfarm:

*“Seismic is the key geophysical monitoring technology providing best resolution. Surveying activities for carbon storage sites in and **around offshore windfarms** can be extremely challenging, and **unacceptable collision risk if deploying long towed seismic streamers (receivers).**”*



*There are some potential mitigating seismic solutions (e.g. Ocean Bottom Nodes OBN) although with higher cost and more limited coverage.”<sup>15</sup>*

and:

**“Ocean-Bottom Nodes Acquisition within Windfarm**

...

**Negatives**

...

- *Coverage gaps @ seabed & shallow section*
  - *Needs High density/very narrow receiver line spacing to compensate*
  - *Significant cost factor”<sup>16</sup>*

2.20.7 As previously explained in bp’s submissions in this DCO examination process, it has determined that if there were wind turbines in the Exclusion Area, the gaps in coverage that would result from using OBN at Endurance means bp and its NEP partners would not be prepared to submit a MMV plan for Endurance based on using OBN (even dense OBN).

2.20.8 Importantly, the NSTA recognises that whether it would be appropriate to use OBN in a MMV plan will depend on a number of factors that will be specific to the CCS project in question and it is clear that the NSTA is not suggesting that OBN (or a hybrid of OBN and streamers or OBN and P-cables) could or should be used in all offshore CCS MMV plans:

**“There are no one-size-fits-all solutions. Monitoring, Measurement and Verification (MMV) activities must be tailored to clearly identified Carbon Storage site risks and uncertainties, taking into account store type, geometric arrangements/scenarios, injection strategies, met-ocean/seabed conditions, etc.”<sup>17</sup>**

2.21 As explained previously, after an extensive review and consideration of these, and other factors relevant to the Endurance Store, bp and its NEP partners have concluded that they are not in a position to develop a MMV plan for Endurance that would allow co-existence in the Exclusion Area. Nothing in the NSTA Technical Report or the August Sewell Report alters this conclusion.

2.22 Accordingly, it continues to be the case that the materials and information relating to technical matters that have been put forward during this HP4 DCO examination process do not support any findings that:

<sup>15</sup> Slide 4 (Annex 4 of Orsted's Deadline 7 submission, [\(REP7-087\)](#))

<sup>16</sup> Slide 30 (Annex 4 of Orsted's Deadline 7 submission, [\(REP7-087\)](#))

<sup>17</sup> Slide 4. See also slides 12-15 (Annex 4 of Orsted's Deadline 7 submission, [\(REP7-087\)](#))

- 2.22.1 if wind turbines were present in the Exclusion Area, a hybrid of OBN and P-cables either could or should be used to acquire seismic data and imaging;
- 2.22.2 the NSTA has indicated that it expects that where offshore CCS and windfarm projects overlap, the MMV plan for CCS will use OBN (or a hybrid of OBN and streamers or P-cables) to acquire seismic data; and
- 2.22.3 the NSTA has indicated or suggested that NEP's MMV plan could or should be based on using OBN or a hybrid of OBN and P-cables.

## Appendix 1 to Annex 2

### BP'S COMMENTS ON ANDREW SEWELL'S 7 AUGUST 2022 REPORT

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#### 1. INTRODUCTION

- 1.1 Orsted's Deadline 7 submission includes a short report by Andrew Sewell of Xodus Group Limited dated 7 August 2022 (the "August Sewell Report") in which Mr Sewell comments on bp's responses (in its Deadline 5a submissions ([REP5a-025](#)) and Annex 4 of its Deadline 6 submissions ([REP6-046](#)) to the July 2022 report by Mr Sewell submitted as Appendix A to Orsted's Deadline 5 submission (the "Sewell Report") ([REP5-075](#)).
- 1.2 Set out below are bp's comments on the August Sewell Report. As that report does not contain numbered paragraphs, in this document bp has: (i) set out what Mr Sewell says in his August report (which for ease of reference is shown in blue text); and (ii) set out below each quoted extract from the August Sewell Report, bp's comments (which are shown in black text). bp has also, for ease of reference, provided a link to the parts of bp's prior submissions that Mr Sewell refers to in his August report.
- 1.3 The statements by Mr Sewell and bp's comments on those statements are set out in the same order as they appear in the August Sewell Report.
- 1.4 To confirm, nothing in the August Sewell Report alters the conclusion of bp and its NEP co-venturers that co-existence in the Exclusion Area (also referred to by Orsted and Mr Sewell as the Overlap Zone) is not feasible.

#### 2. BP'S COMMENTS

- 2.1 Extract from the August Sewell Report:

"In 2.1.4<sup>1</sup> bp states that hybrid OBN and towed streamer seismic data would not provide a "*consistent, reliable and repeatable seismic image*". The NSTA co-location slides [1] provide an example of hybrid streamer and OBN survey around an obstructed area in Malaysia (slide 11), and although this does not appear to be for 4D purposes, there is no reason why a hybrid survey would be less repeatable than individual streamer or OBN surveys."

- 2.2 The slide that Mr Sewell refers to in the NSTA's June 2022 slide pack entitled "Energy Integration Project Phase 3 Spatial Co-Location Project, NSTA, June 2022 (Annex 2 to Orsted's Deadline 7 submission"<sup>2</sup> contains information about seismic data acquired in respect of an oil and gas facility located offshore of Malaysia using a hybrid of OBN and streamer. The slide simply shows that seismic data was successfully acquired by using OBN to conduct a survey around a small number of isolated obstructions. It does not assist in showing either the quality of the seismic data that would be acquired, or the "gaps" that would exist where no data could be acquired, if OBN was used to acquire seismic in a survey carried out within a windfarm, where vessels would need to be moving between wind turbines and the limited space between the turbines means there are likely to be

<sup>1</sup> [REP6-046](#), Annex 4, paragraph 2.1.4 (electronic page 30)

<sup>2</sup> As explained in paragraphs 1.5 – 1.6 of Annex 2 of bp's Deadline 8 submission, the June 2022 slide pack is a document the NSTA prepared for purposes of discussions held with various members of industry and others involved in CCS and offshore wind. The NSTA has not published the document on its website, and the slide Mr Sewell refers to was not included in the Technical Report that the NSTA published on its website on 1 August 2022.

many more areas where seismic cannot be acquired than is the case when a vessel is shooting seismic whilst going around an oil and gas platform.

- 2.3 Additionally, the slide does not provide any information about the quality of the data that was acquired at the Malaysian facility. Without such data, it would be premature to draw any conclusions about the 4D quality and its repeatability. Accordingly, Mr Sewell saying that “*there is no reason why a hybrid survey would be less repeatable than individual streamer or OBN surveys*” is simply opinion and speculation, and the information he refers to does not support a conclusion that using a hybrid of OBN and P-cables within a windfarm at Endurance would provide the necessary “*consistent, reliable and repeatable seismic image*” of the Endurance store that is needed to ensure containment and conformance of the CO2 plume.
- 2.4 Finally, bp understands that the Malaysian survey involved nodes being placed 300m apart which (for reasons explained in bp’s prior submissions in this DCO examination process) is much sparser than what would be needed for Endurance.
- 2.5 Extract from the August Sewell Report:
- “2.6<sup>3</sup> states “Given Mr Sewell’s agreement with bp’s position concerning emerging technologies and the need for NEP’s MMV plan for Endurance to use 3D/4D seismic imaging, the evidence before the Examining Authority does not support finding that emerging technologies would allow co-existence to occur in the Exclusion Area or that NEP does not need to use 3D/4D seismic imaging in its MMV plan”
- It is my opinion however (and I believe bp’s also based on section 3.1 of Annex 4) that neither OBN nor P-Cable are “emerging technologies” but are proven technology in general, even if not yet for 4D for CO2 monitoring. The NSTA co-location slides [1] and [2] provide ample evidence of this for OBN, including bp’s experience at Clair Ridge, slides 19 and 20 in the June 2022 slide pack [1].”
- 2.6 The reference in paragraph 2.6 of Annex 4 of bp’s Deadline 6 submission to “emerging technologies” was to various forms of technologies that are discussed in the OREC/NZTC report and described in the Sewell Report as “*the alternative MMV technologies discussed at the end of section 3.3.1 on pages 19 and 20 [of the OREC/NZTC report]*” and referred to in Section 5.8 of Orsted’s Deadline 1 submission as “emerging technology” (see paragraph 2.5 of Annex 4, [REP6-046](#), electronic page 31).
- 2.7 In terms of OBN and P-cables, bp did not characterise these as “emerging technologies”. Mr Sewell is correct that OBN and P-cables are “proven technology” in the sense that both OBN and P-cables are used to acquire seismic data for offshore oil and gas projects. However (and as explained in paragraph 2.19 of Annex 2 to bp’s Deadline 8 submission):
- 2.7.1 A hybrid of OBN and P-cables have not been used for 4D monitoring of an oil and gas project;
- 2.7.2 OBN has not been used for seismic monitoring of an offshore CCS project;
- 2.7.3 P-cables have not been used for seismic monitoring of an offshore CCS project;
- 2.7.4 a hybrid of OBN and P-cables has not been used for seismic monitoring of an offshore CCS project;
- 2.7.5 OBN has not been used to acquire seismic data in a windfarm;
- 2.7.6 P-cables have not been used to acquire 3D seismic data in a windfarm<sup>4</sup>;

<sup>3</sup> [REP6-046](#), Annex 4, paragraph 2.6 (electronic page 31)

<sup>4</sup> bp notes that Slide 27 of the NSTA Technical Report states “NSTA is aware of only one, carefully planned field example of intra-windfarm 2D HR survey acquisition.” bp understands this to be the testing that was done at Ormonde windfarm and referred to in the OREC/NZTC report ([REP1-057](#), Appendix

- 2.7.7 a hybrid of OBN and P-cables has not been used to acquire seismic data in a windfarm; and
- 2.7.8 a hybrid of OBN and P-cables has not been used for 4D seismic monitoring of a CCS project in a windfarm.
- 2.8 Accordingly, although OBN and P-cables are “proven” technologies in the context of acquiring 3D seismic data for oil and gas projects, currently there are no examples of them being used to acquire seismic data in an offshore CCS project to enable CCS project operators to ensure containment and conformance of a CO<sub>2</sub> plume. In that sense, OBN and P-cables (and a hybrid of the two) are unproven technologies for the purpose of monitoring CCS projects, and particularly inside of a windfarm ([REP6-046](#), electronic page 35).
- 2.9 Mr Sewell is correct that Clair Ridge provides information about OBN. However, Clair Ridge is an oil and gas project and the seismic acquired by OBN occurs around infrastructure, which is very different from what would be involved in using OBN to acquire seismic within a windfarm. Accordingly, the information from Clair Ridge does not assist in determining what would occur in using a hybrid of OBN and P-cables to conduct 4D seismic monitoring of a CCS project in a windfarm.
- 2.10 Extract from the August Sewell Report:
- “2.16<sup>5</sup> states “Given Mr Sewell’s agreement with bp’s position on these issues [the use of streamers in a wind farm and P-Cable in general], the evidence before the Examining Authority does not support finding either that a grid formation of 2x2km would allow co-location in the Exclusion Area or that NEP could use short streamers of less than 200m to acquire seismic data in the event wind turbines were present in the Exclusion Area.*
- To clarify the point made in this section, my opinion is limited to saying that P-Cable on its own is not a viable solution for Endurance. However P-Cable in addition to OBN is a viable solution. OBN would be targeting the Bunter reservoir and sealing formations directly overlaying the Bunter, while the P-Cable would be targeting the shallowest formations from seabed to 500m TVDSS.”*
- 2.11 bp’s statement in paragraph 2.16 of Annex 4 of its Deadline 6 submission was simply referring to the fact that Mr Sewell (as confirmed by him in his August report) had not suggested that P-cables on their own could be used to allow co-location in the Exclusion Zone. bp was not suggesting that Mr Sewell did not believe P-cables could be used at Endurance – it always understood that Mr Sewell’s view was that a hybrid of P-cables with OBN could be a “*viable solution*.”<sup>6</sup>
- 2.12 bp also notes that if a combination of OBN and P-cables were used to acquire seismic in a windfarm, the presence of turbines means that there would be gaps in both the data acquired using OBN and the data acquired using P-cables<sup>7</sup>. Given that OBN and P-cables would (as proposed by Mr Sewell) be used to cover separate parts of the subsurface, using a combination of OBN and P-cables in fact would complicate (rather than resolve) the problems of there being “gaps” in the seismic data and imaging of the Endurance store.

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1.1, sections 3.5-3.6, electronic pages 58-63). As explained in bp’s Technical Assessment ([REP1-057](#), Annex 1 of Appendix 2, section 7.3.2, electronic page 193), 2DHR cannot be used for seismic monitoring at Endurance.

<sup>5</sup> [REP6-046](#), Annex 4, paragraph 2.6 (electronic page 34)

<sup>6</sup> Sections 3 and 4 of Annex 4 of bp’s Deadline 6 submission ([REP6-046](#)) address why such a hybrid would not be a “*viable solution*” and how the Sewell Report, in fact, did not state that such a hybrid could or should be used at Endurance and instead only recommends modelling and field testing occur. bp understands that continues to be the case, albeit that in his August report Mr Sewell has provided additional information about the type of modelling and testing he recommends occur.

<sup>7</sup> In its Deadline 5a submission, bp explains in its response to request number 4 of the Request for Additional Information set out in Section 4.1 of the Sewell Report why and how using P-cables in the shallow section of the subsurface would create gaps ([REP5a-025](#), Annex 1, Appendix 1, electronic pages 20-21)

2.13 Extract from the August Sewell Report:

“4.1<sup>8</sup> describes bp’s initial response to my report and that the scope and timeframe of the .about the nature of the field trials and modelling that I was suggesting. The field trials I was proposing are related to logistics rather than direct data quality and so do not require a full 3D seismic survey to be acquired and processed.”

2.14 Conducting field trials for logistical purposes is only one element of the work that would need to be undertaken to assess whether a hybrid of OBN and P-cables could be used at Endurance and provide the seismic data and image needed to ensure containment and conformance of the CO2 plume. Mr Sewell saying that he is not suggesting that bp undertake field trials and other work relating to data quality does not mean that such work would not need to be undertaken, and bp disagrees with any suggestion that Mr Sewell may be making that carrying out a test to determine whether equipment can be deployed within a certain radius of an obstruction would enable bp and its NEP partners to determine that using OBN and P-cables would allow wind turbines to be present in the Exclusion Zone.

2.15 Extract from the August Sewell Report:

“4.7.2<sup>9</sup> states “if in theory it might be possible to use OBN to acquire good quality seismic data at Endurance, if there were wind turbines in the Exclusion Area, then no matter how good the quality of the data, there would be “gaps” in the seismic data at the location of the wind turbines. .... This means that no matter how good the seismic data acquired by OBN and P-cables might be, it would not be sufficient for NEP’s MMV plan as NEP would not be able to image the complete Endurance store”

The purpose of the field trials and modelling that I am suggesting is to show whether or not this is the case. The field trials would show how close to a wind turbine nodes and air guns could be used. The modelling would show the impact of this on seismic data quality and ability to monitor the CO2 plume.

In 4.8 to 4.13<sup>10</sup> I understand that bp are proposing something more extensive than I had in mind. For example I don’t think it is necessary to acquire an actual OBN 3D seismic survey as part of this. If an OBN 4D baseline survey is needed it can be done any time prior to CO2 injection starting. With regards to sand waves, my concern was with nodes being moved during a survey. Field trials for the impact of sand waves physically moving nodes around does not require a full seismic acquisition. In general, I think bp is describing a different set of trials and modelling to what I envisaged. bp might think that more is required than I had suggested, but this has not been the subject of any discussions so far.

In particular, 4.8.1 states “*by its nature, forward modelling is at best only indicative of a likely “best-case” scenario of what is theoretically possible;*”

The modelling I am suggesting is not to produce a single base case, but to consider a range of seismic survey designs and exclusions zones to see the relative impact on signal-to-noise ratio and imaging of each of these scenarios, and in comparison to a base case of long streamer acquisition.”

2.16 In its Deadline 5a and 6 submissions bp explained in detail the type of modelling and testing that it believes would be required in terms of assessing whether using a hybrid of OBN and P-cables would enable co-existence in the Exclusion Area (and bp explained why such modelling and testing is not feasible or necessary). The additional information that Mr Sewell has provided about the modelling and testing work he suggests occur does not change bp’s views and conclusions explained in its D6 submission, and bp continues to believe that undertaking an exercise of the nature of what Mr Sewell is suggesting would not enable co-location in the Exclusion Area.<sup>11</sup>

<sup>8</sup> [REP6-046](#), Annex 4, paragraph 4.1 (electronic page 36)

<sup>9</sup> [Ibid](#), paragraph 4.7.2 (electronic pages 37-38)

<sup>10</sup> [Ibid](#), paragraphs 4.8-4.13 (electronic pages 38-40)

<sup>11</sup> [Ibid](#), paragraphs 4.8-4.15 (electronic pages 38-40)

- 2.17 In terms of the additional information that Mr Sewell provides in his August report, the testing he proposes would not address or resolve various underlying issues<sup>12</sup>. For example:
- 2.17.1 Mr Sewell says that his concern is with sand waves moving nodes during a survey. As explained in paragraph 8.9 of bp's Deadline 5a submission<sup>13</sup>, a field trial to see how the nodes move during one survey will not address the underlying issue of how the movement of sand waves between surveys will impact on the ability to ensure that the nodes are able to be placed in the same locations for the next survey. It also will not assist in determining the extent of vertical changes in bathymetry between surveys;
- 2.17.2 Carrying out a "*range of survey designs and exclusion zones to see the relative impact of signal-to-noise ratio and imaging of each of these scenarios, and in comparison to a base case of long streamer acquisition*" does not address the underlying issue that the results produced by each survey design are only a "best case scenario".
- 2.18 Mr Sewell says that the work bp says would need to be undertaken concerning the potential use of a OBN and P-cable hybrid at Endurance is "*more extensive than what I had in mind.*"
- 2.19 It is unsurprising that bp would require the type of extensive modelling and testing described in bp's Deadline 5a and 6 submissions, given that Endurance is a First of a Kind (FOAK) project for which its proposed MMV method will be closely scrutinised by the NSTA. Indeed, the NSTA Technical Report, in discussing FOAK projects, states that "*maintaining public confidence is crucial*" and "*Each project requires a robust environmental baseline.*" and it states that "*First-of-a-Kind (FOAK) projects **may be expected to be potentially over-engineered, particularly as MMV methods are tested and certified***".<sup>14</sup> The NSTA also states the following in the "Seismic – Regulatory Requirements" section of its report:
- "The NSTA and UKCS operators generally acknowledged **FOAK surveys should be over-engineered.**"*<sup>15</sup> (emphasis added)
- 2.20 Additionally, the NSTA recognises the importance of taking a robust and risk-based approach to MMV strategies and tools in its Executive Summary, where it states:
- "MMV strategies and tools for carbon storage sites need to address conformance irregularities and containment breaches using a risk-based approach. **A robust suite of surface, marine and downhole tools/methods needs to be tested and deployed to support these strategies, including through trials**"*<sup>16</sup>
- 2.21 This approach by the NSTA and industry is understandable for a number of different reasons, including (as noted by the NSTA in its Technical Report) the importance of public confidence.
- 2.22 BEIS and the NSTA understand that public perception of CCUS technology is a key driver to the success of the CCUS industry. For example, in July 2021 BEIS commissioned Traverse to deliver a public dialogue to understand citizens' attitudes towards Carbon Capture Usage and Storage (CCUS).<sup>17</sup> Public dialogues provide in-depth insight into citizens' views, concerns and aspirations on issues by engaging a diverse and inclusive group of participants. The key finding from the public dialogue was that '*CCUS must be*

<sup>12</sup> bp notes that Mr Sewell does not say in his August report that the work he is suggesting take place would impact the "illustrative" 9 month timeframe he identified in his first report.

<sup>13</sup> [REP5a-025](#), Annex 1, paragraph 8.9, electronic page 14

<sup>14</sup> Slide 4 of the NSTA Technical Report (Annex 4 of Orsted's Deadline 7 submission, [\(REP7-087\)](#))

<sup>15</sup> Slide 19 of the NSTA Technical Report

<sup>16</sup> Slide 4 of the NSTA Technical Report

<sup>17</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1005434/ccus-public-perceptions-traverse-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005434/ccus-public-perceptions-traverse-report.pdf)

safe', indicating safety was the most important criterion identified by the public, with specific reference to injected CO<sub>2</sub> remaining safely within a carbon store.

- 2.23 bp also recognised the importance of public confidence in its Deadline 1 submission<sup>18</sup>, and the bp Technical Assessment:

*“The ability to image and evidence where CO<sub>2</sub> is stored within the Endurance reservoir throughout the injection phase and all the way to closure and transfer to the Government, underpins the ability of bp as the operator to provide confidence to the regulator and the public, in the safety of CCUS operations as a First of a Kind (FOAK) development in the UK. Containment, conformance and confidence constitute the Licence to Operate (LTO) for NEP, regulated by the Oil & Gas Authority (OGA), and requires NEP to utilise best available, proven technologies and techniques to mitigate the risks and challenges of developing the reservoir. This principle is critical given there is no operational experience of CCUS in the UK.”<sup>19</sup>*

- 2.24 Extract from the August Sewell Report:

*“In 4.13.3 bp states “the rig, well and helicopter access requirements identified by bp (which, as explained above in paragraph 2.17 have not been challenged by Mr Sewell ....) mean there could not be co-existence in the Exclusion Area.”*

*This is simply because access issues were outside the scope of my report, and not because I have reviewed these issues and agree with bp’s conclusions.”*

- 2.25 bp stated in sub-paragraph 2.17.5 of Annex 4 of its Deadline 6 submission that Mr Sewell did not address in his report what bp said about access requirements – bp did not say that Mr Sewell agreed with bp in respect of access requirements. The fact that Orsted did not instruct Mr Sewell to address access issues does not alter the point that bp was making. Namely, that Mr Sewell has not said anything that takes issue with or disagrees with what bp has said about access requirements.

- 2.26 Extract from the Sewell August Report:

*“bp’s comments in 4.20<sup>20</sup> are conflating the direct impact of wind turbines as source of seismic noise, with the indirect impact on seismic data quality from small exclusion zones around each turbine. The July NSTA co-location slides [2] contain comments on the direct noise issue from work being done by Heriot Watt university (slide 44). The conclusion says “Windfarms .... appear to be a low level acoustic noise source within the seismic survey spectrum” and “less than an [sic] distant earthquake”. This indicates to me that it should not be a major factor in seismic data quality. I would still maintain that the level of noise from an inactive turbine is likely to be less than that of an active one, although this is not something that I have investigated. Measuring wind turbine noise is another of the field trials that I suggested, and which could be done in a short time frame, around existing wind turbines.”*

- 2.27 The point that bp was making is that inactive wind turbines would be a source of noise that could impact acquiring seismic data. bp was not claiming that an inactive turbine would be as noisy as an active one.

- 2.28 In terms of the study being done by Heriot Watt university, bp notes that (per slide 9 of the 26 July slide pack that Mr Sewell refers to) the work the university is carrying out has not been completed (and the NSTA does not refer to the work in the Technical Report published on 1 August after the 26 July slide pack that Mr Sewell refers to in his August report). Additionally, the implications for Endurance of the results of the work are dependent on various factors including the number and size of turbines included in the study. Accordingly, Mr Sewell’s view that the study indicates that acoustic noise from turbines “*should not be a major factor in seismic data quality*” does not mean that bp’s concerns about the potential impact of acoustic noise on seismic monitoring at Endurance

<sup>18</sup> [REP1-057](#), Appendix 2, paragraph 8.1 (electronic page 130)

<sup>19</sup> [REP1-057](#), Annex 1 of Appendix 2, electronic page 153

<sup>20</sup> [REP6-046](#), Annex 4, paragraph 4.20 (electronic page 41)



are not valid or that when the Heriot Watt work is completed it will address all of bp's concerns.

2.29 Extract from the August Sewell Report:

*"In 4.30<sup>21</sup> bp states "... there are large sand waves and substantial ripple effects present on the seabed of the Endurance area and that the strong tidal currents in the area mean there is a real risk that nodes placed on the seabed could move during the time a survey was being undertaken, which would degrade the seismic data that was acquired.."*

I agree and this is why I suggest that a small number of nodes could be placed on the seabed for the equivalent of the duration of a seismic survey, and their movements tracked to quantify the problem. This would not need a full 3D seismic survey to be acquired.

2.30 bp has explained above in paragraph 2.17 why Mr Sewell's suggestion of placing and tracking a small number of nodes on the seabed during one survey would fail to resolve the OBN sand wave related issues at Endurance, which can only be properly understood and assessed through multiple surveys being conducted over a period of time. Additionally, placing a small number of nodes in one area of the seabed would not address the fact that the size and nature of the sand waves and how they act in one area of the seabed may be very different than in another area, and a survey done in one area is unlikely to be representative of all of the sand waves present in the Endurance seabed area at the time the survey is conducted.

2.31 Extract from the August Sewell Report:

*"The comment in 4.33<sup>22</sup> somewhat overstates what I intended. I think that OBN costs will reduce relative to streamer, but will stay more expensive in the time frames that matter to this project and therefore not "significantly reduced". This is also the opinion of the authors of the NSTA co-location report [1] and [2]. Additionally, I don't think that any emerging technology will have matured sufficiently to make a difference to MMV requirements for Endurance. As noted above however, it is my opinion however (and I believe bp's also based on section 3.1 of Annex 4) that neither OBN nor P-Cable are "emerging technologies"*

2.32 Paragraphs 2.7 - 2.8 above explain why OBN and P-cables currently are not proven in the context of using them for acquiring seismic data for an offshore CCS project and of using them for 4D seismic monitoring of a CCS project located in a windfarm.

2.33 See paragraph 2.43 below for bp's comments concerning the cost of OBN.

2.34 Extract from the August Sewell Report:

*"The issues raised in 4.42<sup>23</sup> relate to how exclusion zones around wind turbines may affect OBN data and is the reason why I suggest conducting field trials and modelling which would be able to quantify the relative impact of different acquisition techniques and exclusion zones the ability of 4D seismic to monitor the CO2 plume."*

2.35 See paragraph 2.14 above as to why Mr Sewell's suggestion does not alter bp's views concerning modelling and field trials.

2.36 Extract from the August Sewell Report:

["Comments on Annex 5: February 2021 \(Endurance 4D Seismic Feasibility\) slide pack](#)

I had not seen this slide pack before but there is not much in there that is new or different to the other documents that I had seen. The summary table on slide 6 is good. I note that this concludes that a dense OBN on a grid of 200m x 50m is a viable solution for 4D monitoring at Endurance, with the caveats about mobile seabed and exclusion zones around wind turbines. This is a different definition of dense OBN to that contained in the table on slide 11 of bp's October 2021 slide pack, which describes a dense OBN as a grid of 100m x 50m, which is twice the number of nodes as assumed in the February 2021

<sup>21</sup> Ibid, paragraph 4.30 (electronic page 43)

<sup>22</sup> Ibid, paragraph 4.33 (electronic page 44)

<sup>23</sup> Ibid, paragraph 4.42 (electronic page 46)

summary. The question of what constitutes a sufficiently dense OBN grid to enable the necessary MMV at Endurance is what could be answered the modelling I suggested.

It is also worth noting that bp estimated the cost of dense (100m x 50m) OBN as £260M-£315M over the lifetime of Endurance MMV compared to £17m for HR towed streamer, in the October 2021 slide pack. In other words more than fifteen times the cost. The work done by the NSTA co-location forum and shown in the June 2022 slide pack [1], estimates that OBN 4D seismic for CCS would be two to three times the cost of towed streamer over the lifetime of a “large aquifer” storage project in UKCS (slide 8). This highlights that different assumptions about survey design can have a large impact on cost estimates.”

- 2.37 Mr Sewell notes that bp’s initial investigation into OBN versus towed streamer technologies in February 2021 summarises that 200m by 50m node spacing was sufficient for imaging Endurance. The summary slide states that the image quality is only “good” versus the “very good – high resolution” label applied to towed streamer seismic. bp’s summary clearly shows that 200m by 50m spacing was not sufficient to equal the image quality and high resolution achieved from towed streamer. The February 2021 investigation was only an investigation of the technologies in a clear water scenario and did not take into account co-location with a windfarm.
- 2.38 In October 2021, bp updated its investigation<sup>24</sup> and provided a summary of what is necessary to achieve as similar a seismic image as possible from OBN as from towed streamer seismic. It is for this reason that the node density increased from 200m by 50m to 100m by 50m, causing the increase in monitoring cost. Consideration was also provided for operating within a windfarm as a dense OBN survey is unlikely to be completed within a single season (also confirmed by the NSTA in their August Technical Report), leading to further increases in monitoring cost.
- 2.39 The NSTA is also in agreement that due to seismic coverage gaps at the seabed and shallow section, OBN “needs high density / very narrow receiver line spacing to compensate”.<sup>25</sup>
- 2.40 Mr Sewell references the NSTA presentation to the co-location forum (led by The Crown Estate) in June 2022<sup>26</sup> where the NSTA stated that the cost of OBN monitoring was “2 to 3 times” greater than towed streamer monitoring. Also submitted in Orsted’s Deadline 7 submission was another presentation by the NSTA from 26<sup>th</sup> July 2022 which was presented at a CCSA led forum by Nick Richardson and Ronnie Parr. The presentation clearly states that “the cost of each OBN 4D survey (baseline + every monitor) is 2 to 5 times more expensive than its streamer equivalent.”<sup>27</sup>
- 2.41 Additionally, at Deadline 1, Orsted submitted the OREC/NZTC report titled “Northern Endurance CCUS Co-location Review”. OREC/NZTC states that the “the cost of acquiring OBN seismic is **approx. 10 times** that of conventional 3D broadband data which is the current standard for towed streamer acquisition.”<sup>28</sup> (emphasis added).
- 2.42 Mr Sewell has not referenced either the OREC/NZTC report or this updated view from the NSTA in his additional comments which shows the level of uncertainty in estimating costs is greater than he suggests, given that both of the NSTA presentations that he references were completed one month apart. It is also clear that the NSTA uses different survey assumptions to bp’s for Endurance in both of its presentations.
- 2.43 bp still believes that the cost for acquiring OBN seismic over Endurance versus towed streamer is up to 15 times greater and in October 2021, bp presented to Orsted, NSTA, TCE and BEIS that the increase in cost for acquiring just 6 OBN seismic surveys versus 6

<sup>24</sup> [REP6-046](#), Annex 6, electronic page 72

<sup>25</sup> [REP7-087](#), electronic page 117

<sup>26</sup> *Ibid*, electronic page 19

<sup>27</sup> *Ibid*, electronic page 55

<sup>28</sup> [REP1-057](#), Appendix 1.1, electronic page 47

towed streamer seismic surveys for NEP over the project lifespan, was forecast to be between £243m - £298m.<sup>29</sup>

- 2.44 It is important to note that the NSTA stated that “*OBN will always be slower (and more costly) than [towed] streamer.*”<sup>30</sup> and that OBN “*cost is a significant factor*”, despite a recognition that costs are likely to reduce in the long-term. As submitted in bp’s Deadline 1 submission<sup>31</sup>, the NEP project will be governed by BEIS’ Transportation and Storage Regulated Investment (TRI) model where the economic regulator will be under an obligation to ensure that all investment in the CCUS infrastructure is economic and efficient.

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<sup>29</sup> [REP6-046](#), Annex 6, electronic page 72

<sup>30</sup> [REP7-087](#), electronic page 63

<sup>31</sup> [REP1-057](#), Appendix 2, sections 9-10 (electronic page 132-134)

**ANNEX 3**  
**VERSION 5 OF BP'S PROTECTIVE PROVISIONS (CLEAN)**

**SCHEDULE [ ], PART [ ]  
Protection for Carbon Dioxide  
Appraisal and Storage Licensee(s)**

**Application:**

1. For the Protection of the Licensee(s) from time to time of United Kingdom Carbon Dioxide Appraisal and Storage Licence CS001, unless otherwise provided for in this Schedule or agreed in writing between the Undertaker and the Carbon Entity the provisions of this part of this Schedule shall have effect.

**Interpretation:**

2. In this Part of this Schedule—

“Applicable Laws” means applicable laws, rules, orders, guidelines and regulations, including without limitation, those relating to health, safety and the environment and logistics activities such as helicopter and vessel operations;

“BP Exploration Operating Company Limited” means BP Exploration Operating Company Limited, with Company Registration Number 00305943, whose registered office is at Chertsey Road, Sunbury On Thames, Middlesex TW16 7BP;

"Carbon Entity" means the entity defined as the Carbon Entity under the Interface Agreement;

“Carbon Sentinel Limited” means Carbon Sentinel Limited, with Company Registration Number 08116471, whose registered office is at 1-3 Strand, London WC2N 5EH;

"Commercial Operation Date" means the date on which the authorised project has supplied electricity on a commercial basis to the national grid;

"Endurance Store" means the geological storage facility in the 'Endurance' saline aquifer subject to the Licence;

"Entity" means the undertaker or the Carbon Entity as appropriate and "Entities" means both of them;

"Exclusion Area" means any area within the area hatched orange on the Protective Provisions Plan and as delineated in the Table of Co-Ordinates;

“Good Offshore Wind Farm Construction Practice” means the application of those methods and practices customarily used in construction of wind farms in the United Kingdom Continental Shelf with that degree of diligence and prudence reasonably and ordinarily exercised by experienced operators and contractors engaged in the United Kingdom Continental Shelf in a similar activity under similar circumstances and conditions;

“Interface Agreement” means the agreement dated 14 February 2013 between (1) The Crown Estate Commissioners (2) Carbon Sentinel Limited and (3) Smart Wind Limited, as varied and adhered to by an agreement dated 12 September 2016 between (1) The Crown Estate Commissioners (2) Smart Wind Limited (3) Carbon Sentinel Limited and (4) the Undertaker and a Deed of Covenant and Adherence dated 10 February 2021 between (1) The Crown Estate Commissioners (2) the Undertaker (3) Smart Wind Limited (4) Carbon Sentinel Limited and (5) BP Exploration Operating Company Limited, or such other agreement as may be entered into by the parties in substitution for those agreements;

“Licence” means the United Kingdom Carbon Dioxide Appraisal and Storage Licence CS001;

“Licensee” means the licensee from time to time of the Licence;

"Longstop Date" means:

- (a) the date three (3) years after the coming into force of this Order; or
- (b) such later date as may be notified to the Entities in writing from time to time by the Secretary of State;

"Notification Area" means any area within the area hatched blue on the Protective Provisions Plan and as detailed in the Table of Co-Ordinates;

"Plan of the Undertaker's Works" means a construction programme, method and details of the proposed location of the Undertaker's Works and minimum requirements known at that time such as safety in accordance with Good Offshore Wind Farm Construction Practice and Applicable Laws to enable the Undertaker to construct and operate the Undertaker's Works;

"Smart Wind Limited" means Smart Wind Limited, with Company Registration Number 07107382, whose registered office is at 5 Howick Place, London, England SW1P 1WG;

"The Crown Estate Commissioners" means The Crown Estate Commissioners on behalf of Her Majesty the Queen, acting in exercise of the powers of the Crown Estate Act 1961;

"the Protective Provisions Plan" means the plan entitled Endurance Store Protective Provisions Plan and certified as the Endurance Store Protective Provisions Plan for the purposes of this Part of this Schedule;

"the Table of Co-Ordinates" means the following table:

Exclusion Area	
Latitude	Longitude
54°8'51.929"N	1°0'34.075"E
54°9'13.497"N	1°0'43.850"E
54°10'49.480"N	0°58'21.782"E
54°12'37.143"N	0°58'31.095"E
54°12'17.413"N	1°12'18.263"E
54°10'48.297"N	1°15'35.528"E
54°9'52.770"N	1°13'54.364"E
54°8'17.458"N	1°11'0.989"E
Notification Area	
Latitude	Longitude
54°7'57.201"N	1°0'9.286"E
54°8'51.943"N	1°0'34.082"E
54°8'17.458"N	1°11'0.989"E
54°9'52.770"N	1°13'54.364"E
54°7'57.603"N	1°13'55.408"E

"Undertaker's Works" means the indicative works permitted by this Order; and

"Wind Entity" means the entity defined as the Wind Entity under the Interface Agreement.

### **The Undertaker's Works**

3. The undertaker must not construct any of the authorised project within the Exclusion Area.
4. The undertaker must not commence construction of any of the authorised project within the Notification Area unless the undertaker has submitted to the Carbon Entity, not less than 56 days' prior, a Plan of the Undertaker's Works within that area.
5. Nothing in this paragraph precludes the undertaker from submitting at any time or from time to time, but in no case less than 56 days before commencing construction, a new plan, instead of the plan previously submitted in accordance with paragraph 4 above.

## Interface Agreement

6. Nothing in this Part of this Schedule shall affect any rights or obligations that exist under the terms of the Interface Agreement, save that the Carbon Entity shall have no liability to the Wind Entity under that agreement due to or arising from the imposition of the provisions of this Part of this Schedule or its impact upon the authorised project and no claim may be made by, nor award granted to, the Wind Entity for any damages as a result of any alleged antecedent breach of the Interface Agreement prior to the date of this Order.

### [Compensation<sup>1</sup>

7. Unless otherwise agreed between the Entities, the Carbon Entity will pay to the Wind Entity [£...] on the earlier of:

(a) the date no more than 60 days after notification by the undertaker to the Carbon Entity of the Commercial Operation Date; or

(b) 1 February 2029,

provided that the provisions of this Part of this Schedule have not ceased to have effect in accordance with paragraph [8]<sup>2</sup> by that date (in which case no payment shall be due).<sup>3</sup>

OR

7. Unless otherwise agreed between the Entities and notified to the Secretary of State in writing, the Secretary of State shall within 2 months of this Order coming into force determine and notify the Entities of the Compensation<sup>4</sup> to be paid by the Carbon Entity to the Wind Entity, such Compensation to be paid on the earlier of:

(a) the date no more than 60 days after notification by the undertaker to the Carbon Entity of the Commercial Operation Date; or

(b) 1 February 2029,

provided that the provisions of this Part of this Schedule have not ceased to have effect in accordance with paragraph [12] by that date (in which case no payment shall be due).

8. In determining the Compensation, the Secretary of State shall balance the impact of the imposition of the Exclusion Area on the authorised project (and the removal of the Carbon Entity's liability to the Wind Entity under the Interface Agreement) pursuant to this Order with the public interest in preserving the full developable area of the Endurance Store;

9. In making a determination of Compensation under paragraph 7, the Secretary of State shall take into account relevant submissions made by the Entities during the examination of the Order (application reference: EN010098), and such further information (if any) provided by the Entities pursuant to paragraph 10.

10. Where the Secretary of State considers that further information is necessary to determine Compensation under paragraph 7, he or she may request this from the Entities, who shall provide it within the period specified in the request.

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<sup>1</sup> Two alternative forms of drafting are proposed, which achieve the same basic purpose and would have the same general process, with the distinction being whether the SoS determines the quantum of compensation prior to determining the DCO and writes the figure into the made Order (bp's Preferred Option) or in the period immediately after the DCO is determined (the Alternative Option). The drafting is included in this version on an 'either/or' basis for the ExA and SoS' consideration. bp's main Deadline 6 submission elaborates on the reasoning.

<sup>2</sup> This refers to the 'Cessation of Provisions' paragraph below, which would be paragraph 8 in circumstances where the Preferred Option compensation drafting was included.

<sup>3</sup> This is the 'Preferred Option'.

<sup>4</sup> If included, 'Compensation' to be defined as '*means a sum of money payable to the Wind Entity in recognition of the removal of the Carbon Entity's liability under the Interface Agreement pursuant to the provisions of this Part of this Schedule*'

11. Any information provided pursuant to paragraph 10 shall be treated as confidential and commercially sensitive by the Secretary of State and (in the event that it is shared by the Secretary of State with that Entity as part of the process of determining Compensation) by the non-disclosing Entity.<sup>5</sup> ]

**Cessation of provisions**

12. Save for paragraph 6, the provisions of this Part of this Schedule shall cease to have effect in the event that prior to the Longstop Date, the Carbon Entity notifies the undertaker that the authorised project may be constructed within the Exclusion Area.

**Notices**

13. Any notice or other written communication required shall be sufficient if made or give to the other Party by personal delivery or by first class post, postage prepaid, to the address set out below:

if to the undertaker, at:

[ ]

if to the Carbon Entity at:

Andy Lane, VP hydrogen, UK

Email: [REDACTED]@uk.bp.com

Address: Chertsey Road, Sunbury-on-Thames, Middlesex TW16 7BP

By way of copy to Clare Haley

Email: [REDACTED]@uk.bp.com

Address: Chertsey Road, Sunbury-on-Thames, Middlesex TW16 7BP

14. Notices or written communications made or given by personal delivery shall be deemed to have been sufficiently made or given when sent (receipt acknowledged), or if posted, 5 business days after being placed in the post, postage prepaid, or upon receipt, whichever is sooner.

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<sup>5</sup> This is the 'Alternative Option'.



**ANNEX 4**  
**VERSION 5 OF BP'S PROTECTIVE PROVISIONS (TRACKED-CHANGE)**

**SCHEDULE [ ], PART [ ]**  
**Protection for Carbon Dioxide**  
**Appraisal and Storage Licensee(s)**

**Application:**

1. For the Protection of the Licensee(s) from time to time of United Kingdom Carbon Dioxide Appraisal and Storage Licence CS001, unless otherwise provided for in this Schedule or agreed in writing between the Undertaker and the Carbon Entity the provisions of this part of this Schedule shall have effect.

**Interpretation:**

2. In this Part of this Schedule—

“Applicable Laws” means applicable laws, rules, orders, guidelines and regulations, including without limitation, those relating to health, safety and the environment and logistics activities such as helicopter and vessel operations;

“BP Exploration Operating Company Limited” means BP Exploration Operating Company Limited, with Company Registration Number 00305943, whose registered office is at Chertsey Road, Sunbury On Thames, Middlesex TW16 7BP;

"Carbon Entity" means the entity defined as the Carbon Entity under the Interface Agreement;

“Carbon Sentinel Limited” means Carbon Sentinel Limited, with Company Registration Number 08116471, whose registered office is at 1-3 Strand, London WC2N 5EH;

"Commercial Operation Date" means the date on which the authorised project has supplied electricity on a commercial basis to the national grid;

"Endurance Store" means the geological storage facility in the 'Endurance' saline aquifer subject to the Licence;

"Entity" means the undertaker or the Carbon Entity as appropriate and "Entities" means both of them;

"Exclusion Area" means any area within the area hatched orange on the Protective Provisions Plan and as delineated in the Table of Co-Ordinates;

“Good Offshore Wind Farm Construction Practice” means the application of those methods and practices customarily used in construction of wind farms in the United Kingdom Continental Shelf with that degree of diligence and prudence reasonably and ordinarily exercised by experienced operators and contractors engaged in the United Kingdom Continental Shelf in a similar activity under similar circumstances and conditions;

“Interface Agreement” means the agreement dated 14 February 2013 between (1) The Crown Estate Commissioners (2) Carbon Sentinel Limited and (3) Smart Wind Limited, as varied and adhered to by an agreement dated 12 September 2016 between (1) The Crown Estate Commissioners (2) Smart Wind Limited (3) Carbon Sentinel Limited and (4) the Undertaker and a Deed of Covenant and Adherence dated 10 February 2021 between (1) The Crown Estate Commissioners (2) the Undertaker (3) Smart Wind Limited (4) Carbon Sentinel Limited and (5) BP Exploration Operating Company Limited, or such other agreement as may be entered into by the parties in substitution for those agreements;

“Licence” means the United Kingdom Carbon Dioxide Appraisal and Storage Licence CS001;

“Licensee” means the licensee from time to time of the Licence;

"Longstop Date" means:

- (a) the date three (3) years after the coming into force of this Order; or
- (b) such later date as may be notified to the Entities in writing from time to time by the Secretary of State;

"Notification Area" means any area within the area hatched blue on the Protective Provisions Plan and as detailed in the Table of Co-Ordinates;

"Plan of the Undertaker's Works" means a construction programme, method and details of the proposed location of the Undertaker's Works and minimum requirements known at that time such as safety in accordance with Good Offshore Wind Farm Construction Practice and Applicable Laws to enable the Undertaker to construct and operate the Undertaker's Works;

"Smart Wind Limited" means Smart Wind Limited, with Company Registration Number 07107382, whose registered office is at 5 Howick Place, London, England SW1P 1WG;

"The Crown Estate Commissioners" means The Crown Estate Commissioners on behalf of Her Majesty the Queen, acting in exercise of the powers of the Crown Estate Act 1961;

"the Protective Provisions Plan" means the plan entitled Endurance Store Protective Provisions Plan and certified as the Endurance Store Protective Provisions Plan for the purposes of this Part of this Schedule;

"the Table of Co-Ordinates" means the following table:

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54°10'48.297"N	1°15'35.528"E
54°9'52.770"N	1°13'54.364"E
54°8'17.458"N	1°11'0.989"E
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54°7'57.201"N	1°0'9.286"E
54°8'51.943"N	1°0'34.082"E
54°8'17.458"N	1°11'0.989"E
54°9'52.770"N	1°13'54.364"E
54°7'57.603"N	1°13'55.408"E

"Undertaker's Works" means the indicative works permitted by this Order; and

"Wind Entity" means the entity defined as the Wind Entity under the Interface Agreement.

### The Undertaker's Works

3. The undertaker must not construct any of the authorised project within the Exclusion Area.
4. The undertaker must not commence construction of any of the authorised project within the Notification Area unless the undertaker has submitted to the Carbon Entity, not less than 56 days' prior, a Plan of the Undertaker's Works within that area.
5. Nothing in this paragraph precludes the undertaker from submitting at any time or from time to time, but in no case less than 56 days before commencing construction, a new plan, instead of the plan previously submitted in accordance with paragraph 4 above.

## Interface Agreement

6. Nothing in this Part of this Schedule shall affect any rights or obligations that exist under the terms of the Interface Agreement, save that the Carbon Entity shall have no liability to the Wind Entity under that agreement due to or arising from the imposition of the provisions of this Part of this Schedule or its impact upon the authorised project and no claim may be made by, nor award granted to, the Wind Entity for any damages as a result of any alleged antecedent breach of the Interface Agreement prior to the date of this Order.

### [Compensation<sup>1</sup>

7. Unless otherwise agreed between the Entities, the Carbon Entity will pay to the Wind Entity [£...] on the earlier of:

(a) the date no more than 60 days after notification by the undertaker to the Carbon Entity of the Commercial Operation Date; or

(b) 1 February 2029,

provided that the provisions of this Part of this Schedule have not ceased to have effect in accordance with paragraph [8]<sup>2</sup> by that date (in which case no payment shall be due).<sup>3</sup>

OR

7. Unless otherwise agreed between the Entities and notified to the Secretary of State in writing, the Secretary of State shall within 2 months of this Order coming into force determine and notify the Entities of the Compensation<sup>4</sup> to be paid by the Carbon Entity to the Wind Entity, such Compensation to be paid on the earlier of:

(a) the date no more than 60 days after notification by the undertaker to the Carbon Entity of the Commercial Operation Date; or

(b) 1 February 2029,

provided that the provisions of this Part of this Schedule have not ceased to have effect in accordance with paragraph [12] by that date (in which case no payment shall be due).

8. In determining the Compensation, the Secretary of State shall balance the impact of the imposition of the Exclusion Area on the authorised project (and the removal of the Carbon Entity's liability to the Wind Entity under the Interface Agreement) pursuant to this Order with the public interest in preserving the full developable area of the Endurance Store;

9. In making a determination of Compensation under paragraph ~~8~~7, the Secretary of State shall take into account relevant submissions made by the Entities during the examination of the Order (application reference: EN010098), and such further information (if any) provided by the Entities pursuant to paragraph 10.

10. Where the Secretary of State considers that further information is necessary to determine Compensation under paragraph ~~8~~7, he or she may request this from the Entities, who shall provide it within the period specified in the request.

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<sup>1</sup> Two alternative forms of drafting are proposed, which achieve the same basic purpose and would have the same general process, with the distinction being whether the SoS determines the quantum of compensation prior to determining the DCO and writes the figure into the made Order (bp's Preferred Option) or in the period immediately after the DCO is determined (the Alternative Option). The drafting is included in this version on an 'either/or' basis for the ExA and SoS' consideration. bp's main Deadline 6 submission elaborates on the reasoning.

<sup>2</sup> This refers to the 'Cessation of Provisions' paragraph below, which would be paragraph 8 in circumstances where the Preferred Option compensation drafting was included.

<sup>3</sup> This is the 'Preferred Option'.

<sup>4</sup> If included, 'Compensation' to be defined as '*means a sum of money payable to the Wind Entity in recognition of the removal of the Carbon Entity's liability under the Interface Agreement pursuant to the provisions of this Part of this Schedule*'

11. Any information provided pursuant to paragraph 10 shall be treated as confidential and commercially sensitive by the Secretary of State and (in the event that it is shared by the Secretary of State with that Entity as part of the process of determining Compensation) by the non-disclosing Entity.<sup>5</sup> ]

### Cessation of provisions

12. Save for paragraph 6, the provisions of this Part of this Schedule shall cease to have effect in the event that prior to the Longstop Date, the Carbon Entity notifies the undertaker that the authorised project may be constructed within the Exclusion Area.

### Notices

13. Any notice or other written communication required shall be sufficient if made or give to the other Party by personal delivery or by first class post, postage prepaid, to the address set out below:

if to the undertaker, at:

[ ]

if to the Carbon Entity at:

Andy Lane, VP hydrogen, UK

Email: [REDACTED]@uk.bp.com

Address: Chertsey Road, Sunbury-on-Thames, Middlesex TW16 7BP

By way of copy to Clare Haley

Email: [REDACTED]@uk.bp.com

Address: Chertsey Road, Sunbury-on-Thames, Middlesex TW16 7BP

14. Notices or written communications made or given by personal delivery shall be deemed to have been sufficiently made or given when sent (receipt acknowledged), or if posted, 5 business days after being placed in the post, postage prepaid, or upon receipt, whichever is sooner.

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<sup>5</sup> This is the 'Alternative Option'.

## **APPENDIX GH.2.6**

<b>CLIENT</b>	Genesis, On behalf of BP
<b>PROJECT TITLE</b>	NEP FEED Landfalls
<b>CONTRACT NO.</b>	110-045

This document remains the property of Stockton Drilling Limited and is issued on loan to 'the holder' on the understanding that it shall remain in the safe custody of the holder and be returned to the Project Manager on termination of the contract or the holder's employment (*as applicable*). The holder shall be responsible for complying with the instructions that accompany any revisions.

The Project Manager, or his nominee, shall only issue revisions of this document.

<b>DOCUMENT NUMBER</b>
110-045-TIN-002
<b>DOCUMENT TITLE</b>
TECHNICAL INFORMATION NOTE – HDD DRILLING FLUIDS

<b>SIGNATURE:</b>					
B02	15.07.22	Issued for Information		Mark Gardner Engineering Design Manager	S Stephens Specialist Projects Director
B01	13.07.22	Issued for Information			S Stephens Specialist Projects Director
<b>REV</b>	<b>DATE</b>	<b>ISSUE STATUS</b>	<b>PREPARED</b>	<b>REVIEWED</b>	<b>APPROVED</b>

**REVISION STATUS**

REV	DATE	REVISION DESCRIPTION
B01	13.07.22	Issued for information to the Client to assist them with clearing planning and marine license conditions

REV	DATE	REVISION DESCRIPTION
B02	15.07.22	Clarity added regarding offshore works and mitigation

REV	DATE	REVISION DESCRIPTION

REV	DATE	REVISION DESCRIPTION



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# 1 INTRODUCTION

Please read the entirety of this document to assist with any potential questions related to “drilling fluid”.

Further this is a technical note and does not negate or allow Stockton’s to refrain from developing appropriate site-specific designs, method statements and risk assessments as identified within the NEP Landfall FEED scope of works.

This document is written to provide the reader with a high-level overview of the use of ‘Bentonite’ in the trenchless environment.

This Technical Information Note (TIN) is to summarise bentonite drilling fluid, potential risks and subsequent mitigation measures for the Morlais cable landfall.

## 1.1 EXECUTIVE SUMMARY

The risk of bentonite break out at the Teesside and Humberside landfall is understood to be small to negligible due to the following reasons:

1. Preliminary design of the directional drills will be conducted to identify suitable depths of the HDD bore path using a mixture of desk top studies and onsite surveys.
2. Routes which pose a high risk of bentonite break out will be eliminated.
3. Designed at a suitable depth in a competent homogenous geological layer.
4. Weaker, non-cohesive layers are being ‘cased’ with a carrier sleeve to prevent a breakout during the initial shallow stages of the drill or removed ensuring drilling commences from rockhead.

The remainder of the document addresses how the summary points raised within the ‘Executive Summary’ were reached.

# 2 BENTONITE

## 2.1 WHAT IS BENTONITE

The drilling fluid used during trenchless crossings including HDD (Horizontal Directional Drilling) comprises of bentonite as the primary base (a mined clay) which is delivered to site as a dried and finely ground powder. This is rehydrated in the temporary mix tank with potable water. In addition to the bentonite, the drilling fluid contains carefully chosen additives to control its rheological properties (See 2.3 for further information).

## 2.2 BENTONITE USES

Drilling fluid, a composite made of Bentonite and water has the following functions:

- To remove cuttings from in front of the drill bit
- Power the mud motor
- To transport cuttings from the drill face through the annular space towards the surface
- Lubricate the drill string during drilling phases and HDPE strings during pullback
- Cooling the reamers (cutting tools)
- Hole stabilization

- Creation of a filter cake against the wall of the hole to minimize the risk of loss of drilling fluid or influx of groundwater penetration into the borehole

## 2.3 BENTONITE CONCENTRATIONS

The characteristics of drilling fluid, especially the viscosity can be adjusted during the drilling phases by changing the structure of the composite.

The drilling fluid consists of a low concentration bentonite – water mixture. Depending on the formation to be drilled through, the concentration is between 13 litres (30kg) and 35 litres (80kg) of dry bentonite clay per m<sup>3</sup> of water.

The use of bentonite has a number of benefits:

- It is a naturally occurring material, (not chemical)
- It is recyclable.
- It is on the PLONOR<sup>1</sup> list, so discharge onshore or offshore is not a danger to the environment<sup>2</sup>
- Please see section 6 for an example Materials Safety Data Sheet MSDS.

There is little to no valuable evidence from onshore government bodies regarding the use of bentonite (due the materials non-hazardous label). We therefore reference PLONOR within this document as the list is maintained by CEFAS<sup>3</sup> which is an executive agency of the United Kingdom government Department for Environment, Food and Rural Affairs. This confirms the ‘non-hazardous’ rating of the product as demonstrated by the MSDS within section 6

## 2.4 OTHER DRILLING MATERIALS

The Offshore Chemical Notification Scheme (OCNS) applies to chemicals that are intended for use and discharge in the exploration, exploitation and associated offshore processing of petroleum in the UK and Netherlands.

The scheme is regulated in the UK by the Department for Business, Energy & Industrial Strategy (BEIS) using scientific and environmental advice from CEFAS.

The project will where possible ensure that all drilling materials used are CEFAS or OCNS (Centre for Environment, Fisheries and Aquaculture Science) rated.

# 3 RISK OF BENTONITE BREAKOUT

## 3.1 BENTONITE LOSS TO SURFACE

Surface breakout most commonly occurs within the first 30m from entry and a competent contractor will avoid this on 90% (Subjective, based on industry experience) of projects. This is due to the drill being shallow and not yet at the optimum drill depth as identified within the cross-section drawings and detail design.

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<sup>1</sup> PLONOR Poses Little Or No Risk

<sup>2</sup> Discharge is not planned for this project

<sup>3</sup> CEFAS The Centre for Environment, Fisheries and Aquaculture Science

The execute contractor will have a person walking the drill alignment as far as reasonably practicable (Within agreed site boundaries) checking for signs of a breakout. If detected the drilling is stopped immediately and the spill contained and removed.

The contractor will maintain a stock of ready filled sandbags on site to contain a breakout if it occurs and a small pump with flexible hose to pump the bentonite back to the entry pit.

Drilling fluid (bentonite) can sometimes break out of the bore in case of highly fissured clay, gravels or where there are large interconnected fissures in the ground.

Breakouts may also occur where man made features are present (e.g. old SI boreholes). In the event of egress of drilling fluid from the bore it is only likely to reach ground level where there is a continuous path available to the surface.

The risk of a bentonite breakout during drilling cannot be fully assessed beforehand<sup>4</sup> however any decrease in the mud volume returning to the entry pit will trigger the need for personnel to closely monitor the area around the drilling head.

For this reason, a close watching brief during drilling activities and a detailed contingency plan is essential to ensure that any drilling fluid breakout is contained, banded and pumped back to the entry pit with minimum disturbance to the surrounding environment.

### 3.2 BENTONITE LOSS TO VOIDS ONSHORE & OFFSHORE

During drilling in ground with high permeability (e.g., peat) or voids (e.g., chalk) drilling fluid can be lost to the ground. Thorough ground investigation and good design are the main tools in mitigating this risk for the project. If fluid is lost to the ground the mud man<sup>5</sup> will quickly identify the losses because of the falling fluid levels within their mud tanks. Generally, the mud man will identify any losses greater than 2m<sup>3</sup> volume. Pumping will then be stopped and action taken to seal the area of loss; usually with lost circulation additives

### 3.3 BENTONITE LOSS OFFSHORE

The drill will likely require an offshore jack up barge with a second drill rig located on it that works in tandem with the onshore drill rig.

The drill and fluids are controlled by a continuous casing from the jack up barge to a depth within the seabed that shall be designed to ensure loss of fluid is not possible.

It is most likely that the casing pipe shall be hammered into the seabed until refusal is met thus ensuring the weaker non cohesive layers are cased through and the deeper homogenous layer is entered before the drill head exits the casing.

## 4 BENTONITE BREAKOUT MITIGATION

### 4.1 DRILLING PROCEDURE

A key component of avoiding breakout is effective removal of the cuttings from the bore. If cuttings are not removed they form cuttings beds on the base of the bore, decreasing the cross

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<sup>4</sup> Mitigation measures discussed in the following pages

<sup>5</sup> Mud Man – Industry slang for an technician / engineer who monitors the rheology of the drill fluids

sectional area of the bore. This causes an increase in annular pressure and therefore increases the risk of breakout. Cuttings in the borehole also lead to increased drilling forces, and can eventually cause equipment to be lost or stuck downhole.

The execute contractor will be proactive in ensuring that cuttings are effectively removed and will spend additional time and effort to reduce the risk of both breakout and stuck equipment.

An additional tool that is highly recommended (Depending on the findings of the desk and site study) to assist in monitoring the state of the borehole is Downhole Annular Pressure Monitoring. Supplied as a standard add-on to the guidance equipment the tool measures the pressure in the borehole annulus in real-time. The actual value can be compared to limit values calculated from hydro fracture analysis to avoid damaging the ground surrounding the HDD during hole drilling. By avoiding any over-pressuring of the surrounding ground, the risk of surface breakout is greatly reduced.

Minimising breakout / Frac out impact	
Risk	Mitigation Measures
Breakout of drilling fluid to the surface during drilling	Detail design of the landfall, showing geological layers and intended drill path
	HDD design has sufficient depth below surface for the expected ground conditions
	Removal of poor ground / ground stabilisation prior to drilling
	Casing through weaker cohesive layers
	Hydro fracture analysis and calculation
	Monitoring of drilling fluid returns and volumes to warn of inadequate hole cleaning
	Drilling fluid to be of sufficient viscosity and properties for the ground being drilled
	Real time downhole annular pressure monitoring to warn of over pressurising by drilling fluid (Pressure set by hydro fracture calculation)
	Have lost circulation materials on site to seal any breakout

#### 4.2 SITE MONITORING AND COMMUNICATION

During the construction phase the following onsite communication modes shall be adopted:

Project Communication Modes			
Project Level	Site Project Meetings (including relevant stakeholders)		
Work-gang	Daily Toolbox Talks	Health & Safety Inductions	Method Statement Briefings
Individuals	Directly with each employee		'Open door policy'

Drilling mud breakouts are only likely to happen when the fluid is under pressure, so during drilling, site monitoring will be carried out by dedicated, competent and suitably experienced personnel.

The site to be monitored<sup>6</sup> will include an area of 100m in front or behind the drill head and 25m either side of the centre line of the drill route.

The site will be divided into areas which will be checked regularly. Records shall be maintained of inspections.

In addition, a downhole annular pressure sensor will be used during drilling. The maximum allowable annular pressure according to the design calculations will be plotted on the screen within the drilling control cabin with an alarm sounding when a defined limit is reached.

If the allowable pressure is exceeded, the contractor shall stop drilling and retract the drilling assembly until the blockage has been cleared before continuing to drill.

#### 4.2.1 ANNULAR PRESSURE MONITORING

The FEED design will include a theoretical calculation (if appropriate or may be undertaken at detail design) of hydro fracture for the landfall. This calculation is to be graphed against chainage (Distance) and vertical elevation. The graph is to include plotted lines representing the following parameters:

- The topographic surface;
- The vertical bore hole alignment;
- The minimum pressure required to create fluid returns in the entry pit ( $P_{min}$ );
- The maximum allowable pressure ground could withstand without hydrofracturing ( $P_{max}$ );
- The design must prove that  $P_{min}$  will remain lower than  $P_{max}$  including a factor of safety.

During the drilling of the pilot hole the onsite project team must plot the actual annular pressure on to the theoretical graph mentioned above in real time. The Contractor is to act accordingly if  $P_{min}$  approaches  $P_{max}$ . Measures such as cleaning the hole, reducing the fluid pressure, reducing the rate of penetration (ROP) should be implemented.

Evidence of calibration of the pressure sub tool shall be submitted to the Clients Representative prior to commencement of the pilot bore or before re-entering the pilot bore if removed.

#### 4.3 SITE REPORTING

The following table provides a list of recommended documents that are to be completed during directional drilling, they all play a role in ensuring the execute contractor follows best practices which further minimises the risk of bentonite break out.

Detail design shall dictate which documents become a requirement and the contract shall dictate the handover / frequency of reporting details

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<sup>6</sup> Area based on high level information, subject to detail design

HDD Record / Report	Included Information	Handover Frequency / Details
Rig Log (Pilot, Reaming and Conditioning)	Rod time, torque and carriage forces. Geology and fluid comments (returns / losses).	By noon the next day.
Steering Log	Azimuth, length and inclination. 3 & 10 joint checks. Position to be referenced to the designed alignment.	By noon the next day.
Rate of Penetration Chart (ROP)	Rod cutting time. Face time. Rig gear / forces. Bit size.	By noon the next day.
Annular Pressure Graph	$P_{min}$ , $P_{max}$ and $P_{actual}$ . Bore profile, ground level.	By noon the next day.
Pipe Pull Back Logs (Casing and Carrier)	Rod time, torque and carriage forces. Fluid comments.	By noon the next day.
Filling and Pre-Hydro Test Logs	Water quantity, times and pressure.	By noon the next day.
Grouting Logs (If Rqd')	Grout quantity, times and pressure.	By noon the next day.
Plotted Pilot Hole AsBuilt (real time)	Plotted as-built bore path relative to the designed and planned bore path.	By noon the next day.
Welding Logs	Welder, weld type, number, date, if tested and rods used.	By noon the next day.
Resources	Details of plant materials and labour	By noon the next day.
Settlement Logs (If Rqd')	Details of settlement or heave along the HDD alignment.	Weekly

## 5 LOST CIRCULATION MATERIALS

Lost circulation is the loss of drilling fluid from the borehole through cracks, crevices, or porous formations to surface or voids and is referred to in the industry as a 'breakout' It can be partial or complete, depending on the conditions. Lost circulation is sometimes referred to as lost returns, either partial or complete, because part or all of the fluid fails to return to the surface. When circulation is lost, the drilling fluid is not performing one of its major functions, that of transporting the cuttings up the hole where they can be released in the mud tank or pit. If the cuttings are not removed from the hole, they will pack around the drill string above the bit, resulting in stuck pipe and possible loss of the bit, collars, part of the string and perhaps, the hole.

If the geological formation being drilled through has large cracks or crevices **present**, the fluid may carry the cuttings into the formation and away where they cannot pack around the drill string, but there is no way of being assured that this is the case. Drilling without circulation is known as drilling blind. Complete loss of circulation usually results in the fluid level dropping to considerably below the surface with the resultant complete or partial loss of fluid pressure stabilizing the hole walls.

Lost circulation is probably the most important problem encountered in drilling. It results in:

1. loss of expensive fluid components,
2. loss of drilling time
3. use of potentially expensive lost circulation materials

Despite the severity of the problems, most industry experts agree that probably one-half the lost circulation problems can be avoided, and many are driller induced due to inexperience, or not following agreed protocols, hence suitably experienced and qualified construction team with proper planning and rig operation are of the utmost importance.

The route of all the directional drills has been carefully selected to ensure it is suitable for the trenchless methodology of directional drilling.

Calculations have been conducted to select a rig size the minimise the annular pressure that causes frac outs at surface

## **6 BENTONITE BREAKOUT CLEANUP**

The execute contractor shall develop and produce a detailed bentonite breakout plan / methodology, as a minimum we expect the contractor have available at all times:

1. Silt fencing
2. 4" mobile suction pump, or similar
3. Seal pups (Industry brand name for large sausage shaped containment and absorption pad) or similar
4. Straw bales or similar
5. Timber stakes or similar
6. Sand bags or similar
7. Small tools for erecting temporary bunds

The following sequence shall be followed following a breakout<sup>7</sup>:

1. Once the break out / frac out location has been identified the priority is personal safety and then containment.
2. The drilling activity will be immediately stopped – therefore the fluid decreases in pressure, stopping further fluids migrating to surface.
3. Locate the frac out / break out (15 to 30 minutes)
4. Most surface breakouts are quantifiable in litres of fluid and contained using straw bales and silt fencing to contain the fluid (15 to 30 minutes)
5. The drill fluid is then covered with absorbent granules to increase the viscosity to enable the drilling fluid to become a thick clay that can be removed from surface (15 minutes)
6. All of the drilling fluid at surface level can and will be removed back to the drilling compound (60 minutes)
7. In the extremely unlikely (Due to prior planning as identified above) event of a larger break out quantifiable by cubic metres of fluid the priority is always containment.
8. Containment is by the use of silt fencing and straw bales (30 to 60 minutes)
9. Due to the larger volume of fluid to recover a vacuum tanker, or suction pump and hose may be utilised to remove the fluid off the ground. (8 hrs)
10. Remaining deposits would be cleaned and removed from site by hand (60 minutes)

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<sup>7</sup> Durations provided in this section are based on information currently available and existing high-level design





**CLEAR SOLUTIONS**

Performance Drilling Products  
The Earth Can Trust

**PRODUCT NAME:** Ultrabore®  
**Safety Data Sheet No:** 5002EC

**1. Identification of the Substances and Details of the Company**

**Product Description:** Drilling Fluid Additive  
**Company Name and Address:**  
Clear Solutions International Ltd  
Unit B3, Wem Industrial Estate  
Soulton Road  
Wem  
Shropshire SY4 5SD  
UK

**Date Prepared:** August 2009  
**Issue No:** 3  
**Date Reviewed:** March 2016



**Email:** info@drilling-products.com

**2. Hazards Identification**

**Classification of the substance**

Classification Regulation (EC) No 1272/2008: not hazardous  
Classification Directive 67/548/EEC, 1999/45/EC: not classified

**Label elements**

Labeling Regulation (EC) No 1272/2008: not classified

**Other hazards**

Not applicable

**3. Composition/Information on Ingredients**

**Substances**

Chemical nature: Naturally occurring mineral  
CAS No. 1302-78-9  
Consists mainly of montmorillinite with < 10% accessory minerals (quartz, feldspar, mica and calcite). Respirable Crystalline Silica (<7.1µ) may be present at <1% and therefore not classified as hazardous.

**4. First Aid Measures**

**Skin Contact:** Rinse thoroughly with cold water and seek medical attention if symptoms persist.  
**Eye Contact:** Rinse thoroughly with cold water and seek medical attention if symptoms persist.  
**Inhalation:** Remove person to fresh air, and if symptoms persist seek medical attention.  
**Ingestion:** Drink several glasses of water or milk. If large quantities are ingested seek medical attention.

**5. Fire Fighting Measures**

**Non combustible** - when extinguishing fires bear in mind product becomes slippery when wet.

Clear Solutions Group of Companies

Unit B3, Wem Industrial Estate, Soulton Road, Wem, Shropshire SY4 5SD United Kingdom



**PRODUCT NAME:** Ultrabore®  
**Safety Data Sheet No:** 5002EC

#### 6. Accidental Release Measures

**Personal precautions:** Do not breathe dust – see section 8. Becomes slippery when wet.

**Environmental risk:** Non-toxic.

**Cleaning up:** Sweep or vacuum up and dispose of as non-toxic waste.

#### 7. Handling and Storage

**Handling:** Avoid the creation of dust, and ensure adequate ventilation at point of use. See section 8.

**Storage:** Store in clean, dry environment.

#### 8. Exposure Controls/Personal Protection



**Hand Protection:** Use barrier creams and rubber gloves as required.

**Skin Protection:** Normal work wear.

**Respiratory Protection:** Use dust masks. Ensure adequate ventilation and dust control measures to maintain dust levels below OES\* limit.

\*OES level (Occupational Exposure Standard): Dry bentonite is classed as a nuisance dust with an 8 hour TWA for total dust inhalation of 10mg/m<sup>3</sup> and 5 mg/m<sup>3</sup> for respirable dust. Quartz present in small quantities in this product has a Maximum Exposure Limit (MEL) of 0.4mg/m<sup>3</sup> respirable dust for an 8 hour TWA period. (Respirable dust is that portion with a particle size <7.1µ).

**Eye protection:** Wear safety glasses.

#### 9. Physical and Chemical Properties

<b>Appearance:</b>	Light grey to off-white powder
<b>Odour:</b>	Odourless
<b>pH – 2% suspension:</b>	7 – 9.5
<b>S.G:</b>	2.5
<b>Solubility:</b>	Forms suspension in water
<b>Decomposition Temperature:</b>	Not Evaluated
<b>Flammability:</b>	Non-flammable
<b>Explosive properties:</b>	None
<b>Vapour pressure:</b>	N/A
<b>Flash point:</b>	N/A
<b>Melting point:</b>	N/A
<b>Boiling point:</b>	N/A

#### 10. Stability and Reactivity

**Conditions to avoid:** Avoid generation of dust. Slippery when wet.

**Materials to avoid:** Oxidising agents.

**Hazardous Decomposition Products:** None.

#### 11. Toxicological Information

**Ingestion:** Orally non-toxic.



**PRODUCT NAME:** Ultrabore®  
**Safety Data Sheet No:** 5002EC

**Eye contact:** Causes irritation due to physical abrasion by dust particles.

**Eye contact:** Causes irritation due to physical abrasion by dust particles.

**Skin contact:** Non-toxic may cause skin dryness and chapping.

**Inhalation:** Long term exposure to bentonite dust in excess of the OES limit may result in fibrosis of the lung tissue. The presence of respirable crystalline silica may lead to silicosis if the MEL is persistently exceeded over a long time.

## 12. Ecological Information

### Toxicity

LC<sub>50</sub> (96hrs) Rainbow Trout: 16000 mg/l

LC<sub>50</sub> (24hrs) C. dubia and H. limbata: >500 mg/l

## 13. Disposal Considerations

Dispose of in accordance with local and national regulations using an approved disposal contractor.

## 14. Transport information

There are no specific transport precautions required as product is classified as not dangerous but product should be kept dry as it becomes slippery when wet and avoid dust creation.

## 15. Regulatory Information

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Dangerous Substances Directive 67/548/EEC and Dangerous Preparations Directive 88/379/EEC do not apply.

Follow safety guidelines S22 – do not breathe dust and use only in well-ventilated areas.

COSHH regulations 2002 apply in the UK.

## 16. Other Information

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Typical uses of this product are civil engineering, oil well drilling, ceramics, foundry applications, land fill barriers, bore hole sealing.

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*The information herein has been compiled from sources believed to be reliable and is accurate to the best of our knowledge. However, CLEAR SOLUTIONS INTERNATIONAL LTD cannot give guarantees regarding information from other sources, and expressly does not make any warranties, nor assumes any liability, for its use.*



## 8 HIGH LEVEL RISK ASSESSMENT MATRIX

A High-Level Risk Register has been compiled for the directional drills.

The risk assessment method outlines the level of risk, prioritised in accordance with their probability and severity and classified into a risk category.

### Probability (P)

Probability of Risk	1. Remote	Unlikely but conceivable
	2. Possible	May occur, could well occur
	3. Probable	May occur several times, occurs frequently

### Severity (S)

Severity of Risk	1. Minor	H&S: Injury with short term effect, not reportable under RIDDOR. Environment: Nuisance to fauna and flora. Project: Minor changes required to achieve construction objectives with low cost and/or delivery implications
	2. Severe	H&S: Major injury or disability or ill health with long term effect reportable under RIDDOR, single fatality. Environment: Potentially fatal to fauna and flora for days / weeks. Project: Major changes required to achieve construction objectives with significant cost and/or delivery implications.
	3. Extreme	H&S: Multiple fatalities. Environment: Detrimental to local ecosystem for months / years Project: Catastrophic impact to construction objectives.

### Risk Category (R)

PROBABILITY	Minor	Severe	Extreme
Remote	1	2	3
Possible	2	4	6
Probable	3	6	9

1 – 2 > Risk is controlled as far as is reasonably practical, no further control measures necessary

3 – 4 > Risk is controlled as far as is reasonably practical

6 – 9 > Hazard should be avoided

## 9 HIGH LEVEL RISK ASSESSMENT

Item	Risk	Risk Classification			Mitigation Measures	Reduced Risk Classification		
		P	S	R		P	S	R
1	Breakout of drilling fluid	2	2	4	Monitoring of drilling fluid returns and volumes to warn of inadequate hole cleaning	2	2	4
					Drilling fluid to be of sufficient viscosity and properties for the ground being drilled	2	2	4
					Pilot hole stopped in competent ground before exit point and only advanced to exit when reaming to that point is completed	1	2	2
					Lost Circulation Materials available on site to seal any breakout	2	2	4
					Use of downhole pressure sensor	1	2 <sup>8</sup>	3

<sup>8</sup> Score '2' = Severe, A Major bentonite breakout is very unlikely if all the mitigation measures are followed. However, there is always a chance that for example an old borehole was missed providing a 'conduit' for drill fluid to follow easily to surface.

## 10 MEDIUM LEVEL GENERIC HDD RISK ASSESSMENT MATRIX

Potential Consequences:					A	B	C	D	E
Harm to People P	Environmental Impact E	Asset Damage A	Reputation Impact R		Never heard of in the industry	Heard of in the industry	Occurs several times per year in industry	Happens several times per year in company	Happens several times per year at location
No injury or damage to health	Zero effect	Zero damage	No impact	0	Low	Low	Low	Low	Low
Slight injury or health effects (including FAC and MTC), not affecting work performance, or causing disability	Slight effect; local environmental damage within fence and subsystems	Slight damage: no disruption to process (costs less than £10,000 to repair)	Slight impact: Public awareness but no public concern	1	Low	Low	Low	Low	Low
Minor injury or health effects affecting work performance (e.g. RWC or minor LTI < a few days, reversible health effects)	Minor effect: Contamination, single complaint, no permanent effect	Minor damage: Brief process disruption (costs less than £100,000 to repair)	Limited impact: Local public concern (e.g. may include media/political)	2	Low	Low	Low	Medium	Medium
Major injury or health effects (e.g. prolonged work absence, irreversible health damage)	Local effect: Limited loss of discharges of known toxicity, beyond fence	Localised damage: Partial shutdown (costs up to £1,000,000 to repair)	Considerable impact: Regional public or slight national media/political attention	3	Low	Low	Medium	Medium	High
1 to 3 fatalities or Permanent Total Disability from injury or occupational illness	Major effect: Severe environmental damage	Major damage: Partial operation loss, e.g. 2 weeks shutdown (costs up to £10,000,000)	National Impact: National public concern. Mobilisation of action groups	4	Low	Medium	Medium	High	High
Multiple fatal injury or occupational illness	Massive effect: Persistent severe environmental damage	Extensive damage: Substantial or total loss of operation (cost in excess of £10,000,000)	International impact: extensive negative attention in international media	5	Medium	Medium	High	High	High
<b>HOW TO USE THE RAM:</b> <ol style="list-style-type: none"> <li>For harm to People, select the severity of the consequence that could potentially harm people (0-5)</li> <li>Estimate the likelihood of the potential outcome (A-E) using local knowledge. Likelihood is based upon previous occurrences of that potential consequence due to this type of incident.</li> <li>Repeat steps 1 &amp; 2 for Asset Damage, Environmental Impact and Reputation Impact</li> <li>The "worst case" risk classification is then used in subsequent activities (e.g. selecting investigation owner and level of investigation). The "worst case" is the classification that gives the highest rating of LOW, MEDIUM or HIGH.</li> <li>A "SIGNIFICANT" incident is one with an <b>actual</b> severity of 4 to 5</li> </ol>					<b>EXAMPLE:</b> <ol style="list-style-type: none"> <li>An incident is estimated to have a potential severity of "3" under harm to People</li> <li>How often have there been incidents of this type that has led to a severity of "3"? Answer: This happens several per year within company – "D"</li> <li>Risk Classifications for Harm to People is D3 (MEDIUM)</li> <li>Other Classifications estimated as:- Asset Damage=B2 (LOW) Environmental Impact=C3 (MEDIUM) Reputation Impact=A0 (LOW)</li> <li>"Worst case" Risk Classification is: D3 - MEDIUM RISK</li> </ol>				

## 11 MEDIUM LEVEL GENERIC RISK ASSESSMENT

Task & Hazard	Risk		Controls	Residual Risk Level
<b>Management</b>  Management and control on site	Lack of adequate supervision on site, insufficient to control activities. Supervisors and managers not fully trained. Roles and responsibilities not clearly defined.	4	Managers and supervisors have adequate training and experience. Kick-off meeting for all managers and supervisors. Roles and responsibilities are defined in procedures and method statements	Low
<b>Access and Egress</b>  Tripping and slipping hazards	Sprains and fractures	3	Layout plant, equipment to provide safe access ways by routing cables and hoses to eliminate as far as possible the need to cross them. Where crossing unavoidable provide bridging and protection from overrun by plant.	Low
	Injury to Third Parties	3	Housekeeping. Keep footways clear of mud and slurry. Whilst positioning plant (pumps etc) ensure briefing is given to third parties prior to works commencing and banksman to be in attendance at all times when manoeuvring plant & lifting operation	Low

<p><b>Non authorised entry</b></p> <p>Other contractors and Third Parties</p>	<p>Various minor to serious personal injuries.</p>	<p>2</p>	<p>Ensure plant is positioned out of the way of third parties and is clearly signed</p>	<p>Low</p>
<p><b>Transport</b></p> <p>Movement of plant to site and on site.</p>	<p>Persons struck by vehicles, vehicles overturn or fall into excavation. Fatality, serious personal injury, damage.</p>	<p>4</p>	<p>Relevant parts of Traffic Management Plan be communicated to suppliers and transport agents.</p> <p>Drilling site layout takes account of vehicle and pedestrian safety including: Excavator operating area will be segregated with suitable barriers. Pedestrian walkways will be segregated from vehicle routes where practicable.</p> <p>Plant to be checked upon arrival to site. Operator daily checks to include lights, warning devices and visibility aids.</p> <p>Public not allowed on site</p>	<p>L</p>
<p><b>Lifting Plant and Equipment</b></p> <p>Lifting Operations for positioning of clean up equipment</p>	<p>Fatality, Physical Injury property damage</p>	<p>4</p>	<p>Lifting plan and operation to be controlled by Contractor. Contractor will obtain and forward all necessary information on equipment to allow lifts to be planned.</p>	<p>L</p>



<p><b>Bentonite</b></p> <p>Bentonite Spillage (i.e. on site a bag of bentonite splits)</p>	<p>If wet creates slip hazard</p>	<p>3</p>	<p>Do not wash down spillage area. Contain, shovel up or pump away and bag spillages. Remove all trace from allotments.</p>	<p>L</p>
<p><b>Bentonite break out of drilling fluid from drill bore</b></p>	<p>Contamination of groundwater and water courses with bentonite. (Inert but classed as ‘polluting matter’)</p> <p>Localised effect on flora and fauna if not cleaned up. Unightly deposits</p>	<p>1</p>	<p>Precautions to be centred on vigilance, control, containment and clean up.</p> <p>The line of the bore shall be patrolled and inspected regularly for signs of breakout from the drill bore at the surface.</p> <p>The driller shall monitor pumping pressures continuously for signs of breakout. The mud mixing operative will monitor system volumes continually for signs of losses. Drilling to be ceased at first signs of breakout and contingency plans actioned. Contingency plans to be detailed in method statement.</p> <p>The driller, pipe side operators and patrolling crew shall be in radio contact at all times. Drilling shall be stopped immediately on any reports of breakout and contingency plans and emergency response procedures enacted.</p> <p>Drill fluid sourced from PLONOR list</p>	<p>L</p>

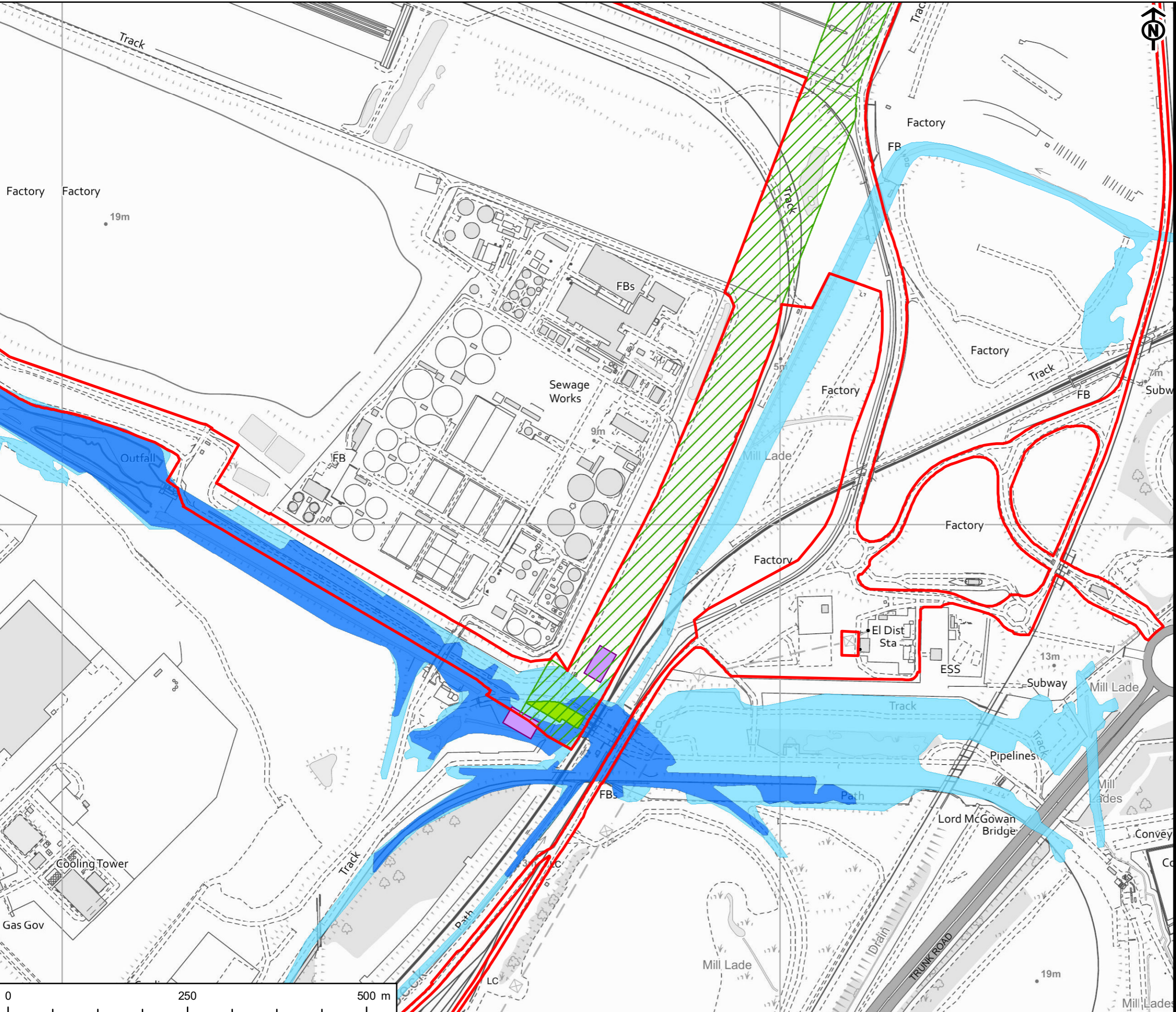
<p><b>Environmental Damage</b></p> <p>Diesel/Hydraulic oil spillage</p>	<p>Contamination of ground and/or water courses.</p>	<p>3</p>	<p>Use self bunding diesel bowser and bunds to tanks. In case of spillage contain oil by creating earth bunds and soak up spill with absorbent material and dispose of in accordance with waste management plan.</p>	<p>L</p>
<p><b>Emergencies</b></p> <p>Inadequate or inappropriate response to situation</p>	<p>Further injury or escalation of situation</p>	<p>4</p>	<p>All operatives receive Contractor site induction and specific project induction. This covers all precautionary requirements and emergency response situations.</p>	<p>L</p>
<p><b>Work at Night</b></p>	<p>Increased risk of injury from other sources due to reduced visibility and operator fatigue</p>	<p>4</p>	<p>Working to be restricted to daytime working hours. Only in an emergency would night time working be allowed in agreement with all Stakeholders</p>	<p>L</p>
<p><b>Risk Rating:</b> See attached risk assessment matrix</p>	<p><b>TRAINING REQUIREMENTS</b></p> <p>Supervisor to advise crew of method statement and risk assessment</p> <p>Site specific induction as required by host contractor/client or where particular site conditions present different hazards and require precautions additional to those identified in this risk assessment.</p>			

REVIEWS: In line with any on site deviations and following regular discussions with workforce, supply chain and other stakeholders

## **APPENDIX WE.2.5**

Project Management Initials: RL Designer: LC Checked: IC Approved: IC

Scale @ A3 1:5,000



**AECOM**

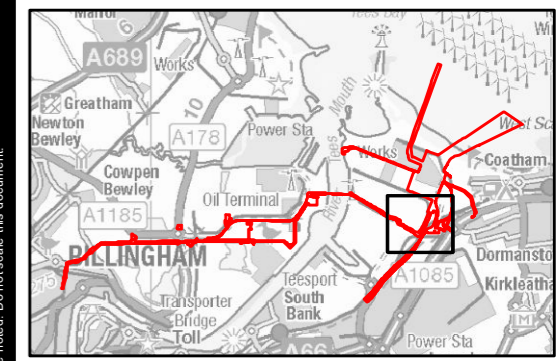
PROJECT  
NET ZERO TEESIDE PROJECT

APPLICANTS  
NZT POWER LTD. AND NZNS STORAGE LTD.

KEY

- Site Boundary
- 1km Study Area
- Work No. 2A - Underground High Pressure Gas Pipeline
- Work No. 2B - Above Ground Installations
- Flood Zone 3 (EA)
- Flood Zone 2 (EA)
- Alternative areas considered

SOURCE:  
EA Flood Map for Planning (Rivers and Sea) - Flood Zone 2 & 3



TITLE  
ENVIRONMENT AGENCY FLUVIAL FLOOD ZONES - DETAILED

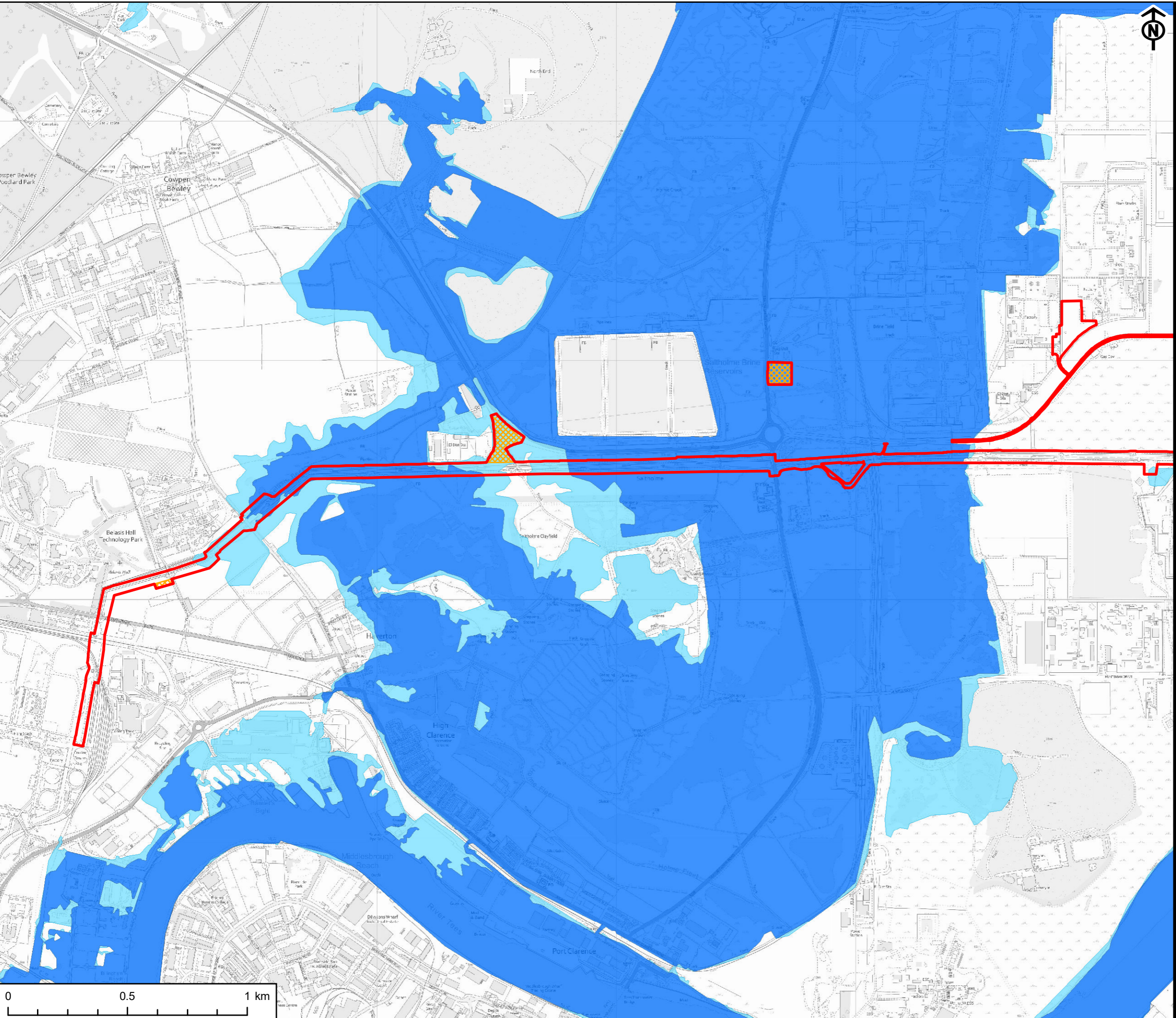
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Nzt\_220818\_ExA\_7\_v1

SHEET NUMBER  
1 of 1

DATE  
18/08/2022

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## **APPENDIX WE.2.6**



- KEY
- Site Boundary
  - Work No. 9 - Temporary Construction and Laydown Area
  - Flood Zone 3 (EA)
  - Flood Zone 2 (EA)

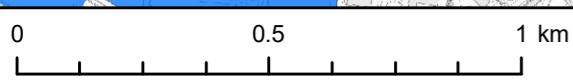
SOURCE:  
EA Flood Map for Planning (Rivers and Sea) - Flood Zone 2 & 3

TITLE  
ENVIRONMENT AGENCY FLUVIAL FLOOD ZONES

REFERENCE  
Nzt\_220815\_ExA\_6\_v1

SHEET NUMBER  
1 of 1

DATE  
15/08/2022



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