North Sea Transition Authority

Guidance on the application for a Carbon Dioxide Appraisal and Storage Licence

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The document can be found on the NSTAs website.

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This document is available in large print,audio and braille on request.
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1.General Guidance

a. Introduction

1. The Oil and Gas Authority ('**OGA**') is now operating as the North Sea Transition Authority ('**NSTA**') and will be referred to as the NSTA in this document. The OGA remains the legal name of the company, and all licences and other legal documentation will continue to refer to the OGA.
2. The NSTA is the licensing authority for offshore carbon dioxide storage in an offshore UK controlled place or English controlled place (as set out in the Energy Act 2008), approving and issuing Carbon Dioxide Appraisal and Storage Licences ('**CS Licence**') and storage permits.
3. Anyone who wishes to explore for or use a geological feature for the long-term storage of carbon dioxide in a UK offshore area must hold a CS Licence, pursuant to section 18 of the Energy Act 2008[1] (the "**Act**"), issued by the NSTA. A storage permit may later be applied for and is required for the storage of carbon dioxide in a storage site with a view to its permanent disposal during the operational phase of the CS Licence. The CS Licence will expire at the end of the appraisal/initial term if an application for a storage permit is not made before that date or if the storage permit application is not approved.
4. In addition to a CS Licence, a Crown Lease from The Crown Estate ('**TCE**') or Crown Estate Scotland ('**CES**') is also required to undertake any intrusive exploration or appraisal (incl. the drilling of a well) or storage activities for all offshore areas, including the territorial sea adjacent to Scotland, as the right to store gas (including carbon dioxide) in the offshore area is vested in the Crown by virtue of Section 1 of the Energy Act 2008. TCE and CES are statutory bodies which act on behalf of the Crown in its role as landowner within the area of the territorial sea and as owner of the sovereign rights of the UK seabed beyond territorial waters. TCE and CES operate as a commercial landowner under the provisions of the Crown Estate Act 1961[2]. The NSTA cannot provide guidance on a Crown Estate lease. Anyone who wishes to apply for a CS Licence should also contact the TCE / CES as appropriate at the earliest opportunity.

b. Scope and Purpose of Guidance

5. This document ("**guidance**") is intended to provide general guidance for companies wishing to apply for a CS Licence and sets out general information and guidance on the licensing process, and more detailed technical guidance on the CS Licence application itself.
6. It does not cover applying for a storage permit, which is also required before carbon dioxide may be stored in the licensed area.
7. This guidance is not a substitute for any regulation or law and is not legal advice. It does not have binding legal

[1] Energy Act 2008 (legislation.gov.uk)
[2] Crown Estate Act 1961 (legislation.gov.uk)

effect. Where the NSTA departs from the approach set out in this guidance, the NSTA will endeavour to explain this in writing to the Applicant.

8. The guidance will be kept under review and may be amended as appropriate in light of further experience, developing law and practice and any change to the NSTA's powers and responsibilities. If the NSTA changes this guidance in a material way, it will publish a revised document.

c. Offering of areas for Licence Applications

9. Applications for CS Licences can only be made in response to a formal invitation from the NSTA.

10. The NSTA will decide when and which areas (if any) to offer for application after considering a number of factors including, but not limited to: matters to which the NSTA is to have regard under s. 8 Energy Act 2016, and input from the Department for Business, Energy and Industrial Strategy's ("**BEIS**") Offshore Petroleum Regulator for Environment and Decommissioning ("**OPRED**") on the Strategic Environmental Assessment and other regulatory requirements.

11. Should the NSTA decide to invite applications for CS Licences in respect of a particular area or areas, it will publish details on its website indicating the opening of a period for application and including any specific details on the application process, application fee and closing date and time.

12. Companies who only wish to carry out offshore seismic surveys and not to drill, might consider applying for a Seaward Exploration Licence. This licence only permits surveying and very shallow boreholes. It does not permit deep drilling, appraisal, or storage, and does not confer any exclusive rights over any area. Each Seaward Exploration Licence covers the entire UKCS (outside the areas covered by existing petroleum production licences unless permission is otherwise granted). The application fee is lower, and the application process simpler, than for a CS Licence. Further details on the Seaward Exploration Licence application process can be found on the NSTA's website[3]. It is the licence holder's responsibility to understand what other regulatory obligations are required prior to undertaking operations.

d. General terms and structure of a CS Licence

13. The NSTA has discretion to decide whether to issue a CS Licence. The general terms and conditions that will normally be set out in a CS Licence document ("**CS Licence Clauses"**), can be found on the NSTA's website[4].

14. While the CS Licence Clauses show the general terms and conditions on which the NSTA is likely to award a CS Licence, pursuant to section 20 of the Act, the NSTA has the right to grant a CS Licence on the terms and conditions that it considers appropriate in any specific circumstances and in accordance with The Storage of Carbon Dioxide (Licensing etc.) Regulations 2010 (the "**Storage Regs**") and other applicable law.

15. A CS Licence grants exclusive rights for the exploration and appraisal of potential storage sites, and storage (if

[3] NSTA: Types of Licences

[4] NSTA: Carbon storage

a storage permit is granted in respect of a storage site) of carbon dioxide and the establishment or maintenance of installations for those purposes.

16. A CS Licence is required for the whole duration of a carbon dioxide storage project and covers three distinct periods (Figure 1):

- **Initial or Appraisal Term**- the period during which exploration, appraisal, and project 'assess' and 'define' phase activities may be carried out to evaluate the potential for a storage project, and/or an application for a storage permit is made. This term ends with either the grant of a storage permit (if applied for) or the expiry of the CS Licence either because no storage permit was applied for or because such application was refused. Note that where there is a work programme in place then this term will be the '**Appraisal term'**, and where there is no such work programme it will be the '**Initial term'**.
- **Operational Term**- the period beginning with the date on which the storage permit is granted and ending with the closure of the storage site.
- **Post-Closure Period**- the period beginning immediately after the closure of the storage site and continuing until the CS Licence is terminated pursuant to The Storage of Carbon Dioxide (Termination of Licences) Regulations 2011.[5]

17. The duration of the Initial/Appraisal Term, as per regulation 4(1) of the Storage Regs "…*may not exceed the period necessary to- (a) generate the information necessary to select a storage site, and(b) prepare the documents required for an application under regulation 6*", namely application for a storage permit. In practical terms, the Initial/Appraisal Term of the CS Licence will be the period to complete any work programme and/or, if appropriate, submit and have approved a storage permit application. Failure to submit the storage permit application before the end of the Initial/Appraisal Term, or a refusal of the application by the NSTA, will result in the expiry of the CS Licence.

18. Where a work programme has been included in the Appraisal term of a CS Licence, that work programme is binding[6] and is the minimum amount of work that the Licensee must carry out within the stipulated timeframes. Failure to deliver a work programme may result in the revocation of the licence.

19. If an Applicant is not proposing any exploration/appraisal activities, and only wishes to hold the CS Licence in order to prepare (assess and define) and submit a Storage Permit application, the NSTA may consider issuing a CS Licence with an Initial, rather than an Appraisal, Term[7].

[5] The Storage of Carbon Dioxide (Termination of Licences) Regulations 2011 (legislation.gov.uk)

[6] The obligation to carry out the work programme is set out in the licence.

[7] The Storage of Carbon Dioxide (Licensing etc.) Regulations 2010 (legislation.gov.uk)

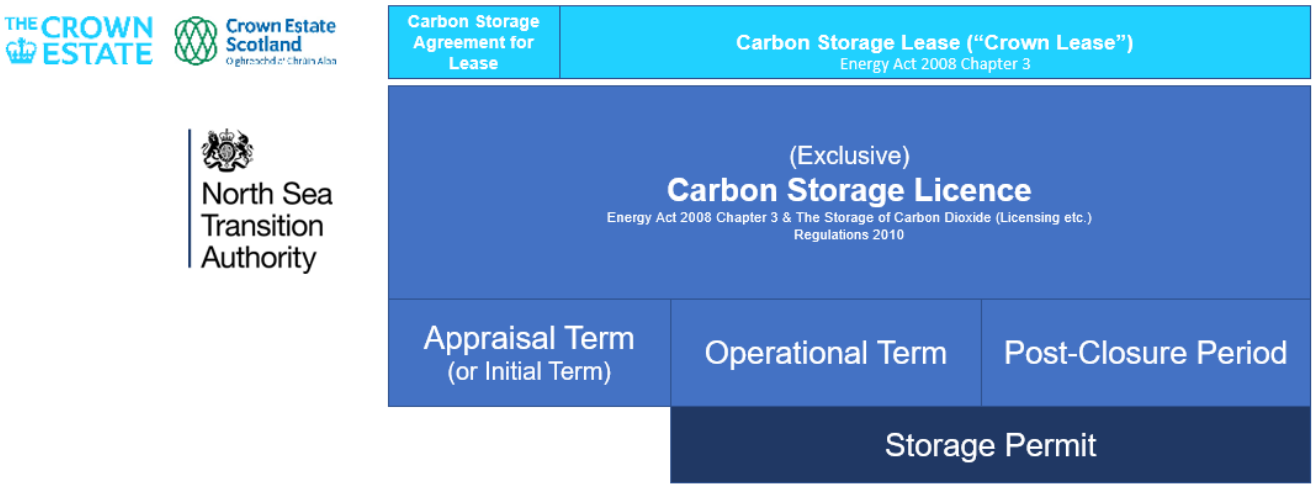

Figure 1. Main periods in a CS Licence

20. A CS Licence may not be granted for the purpose of storing CO_2 in the water column.

21. If a CS Licence is granted, the licensee will not be able to undertake any intrusive exploration work (including the drilling of a well) under the CS Licence without having the corresponding Crown Lease from TCE/CES as appropriate.

22. There are currently no annual rental fees payable to the NSTA for a CS Licence.

e. The Applicant

23. An application may be made by one or more companies ('**Applicant**').

24. The Applicant (where the Applicant is more than one company, each of those companies) must be able to demonstrate financial capability[8] and meet the NSTA's criteria in this regard.

25. Applicants must satisfy the NSTA that they have a place of business in the UK. This means at least one of the following:

a) Having a staffed presence in the UK

b) Being registered at Companies House as a UK company

c) Having a UK branch of a foreign company registered at Companies House

26. The application must include the registered name, address and number of each company that is to hold the CS Licence (if awarded).

27. The NSTA will not award a CS Licence to a company other than as named in the application, so Applicants should decide exactly which company/companies (for example, within the company group) they wish to hold the licence and ensure that the application reflects their choice. Where an Applicant subsequently decides they want a CS Licence to be held by another company, then they will be required to apply to the NSTA for consent to such transfer under the terms of the CS Licence.

[8] NSTA: Financial Guidance

28. Only Applicants who fully meet the NSTA's criteria set out in this section and its assessment of 'fitness'[9] can be considered for award of a CS Licence.

29. Where a CS Licence is held by more than one company, each company bears full joint and several liability for any obligations and commitments arising under the licence.

f. Application Fee

30. A fee is chargeable for a CS Licence application (see link to NSTA Charging regime[10]).

31. Once an application has been received, the NSTA's Accounts team will issue an invoice for the fee, with guidance on how this should be paid.

32. The NSTA will not consider an application until the application fee is paid.

g. How Decisions are Reached

33. The Act gives the NSTA discretion in deciding whether to issue a CS Licence and, if so, to whom and on what conditions. However, under regulation 5(A1) of the Offshore Petroleum Activities (Conservation of Habitats) Regulation 2001 (as amended) ("**Habitats Regulations**") the NSTA cannot grant a CS Licence unless it first has the agreement of the Secretary of State ("**SoS**")[11].

34. In deciding whether to award a CS Licence and if so, to whom, the NSTA considers whether the Applicant is able to effectively and appropriately undertake the appraisal, analysis and planning over the licensed area, and their capability to utilise the available resources to carry out carbon storage effectively and be in a position to submit a credible Storage Permit application. The NSTA will also take into account (amongst other matters) the need to collaborate with BEIS and to assist the SoS in meeting the government's net zero target.

35. Where two or more Applicants have applied for the same storage site(s) and meet the NSTA criteria, a recommendation to award a CS Licence (or otherwise) will be made after evaluation of the applications and respective 'Supporting Information'. The Carbon Dioxide Appraisal & Storage Licence Application Mark Scheme ("**CS Marking Scheme"**) will be used in the evaluation of the Technical Appendix B submitted by the Applicants (see Appendix 1 for further information).

36. In some cases, the NSTA may consider that factors not covered by, or amenable to, the CS Marking Scheme may be relevant to informing the recommendation. This could include, but not be limited to:

a) the Applicant's track record on the completion of work programmes or performance on other licences; or

b) cases where direct comparison between competing applications is difficult, such as those where the geographical coverage and geological focus is different, or where competing work programmes offer different solutions between storage sites (within the same area).

37. The NSTA may accommodate such factors by, for example:

a) suggesting that competing Applicants agree to become one licensee (a "marriage"); or

[9] NSTA: Licensee criteria
[10] NSTA: Charging regime
[11] The Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (legislation.gov.uk)

b) splitting applications for competing acreage so that each Applicant might receive area(s) that it is focused on.

38. The NSTA may suggest a marriage between competing Applicants where their interests and expertise are complementary, and their applications cannot be separated geographically. However, it remains up to the Applicants to make the marriage and agree on terms. If Applicants are unable or unwilling to do so, the NSTA will proceed to make a decision.

39. There are occasions where the NSTA may decide that no application for award of a CS Licence would best serve the NSTA's general objective as set out above.

h. Interviews

40. The NSTA will normally interview all Applicants (certainly where there is competition for the same acreage) before deciding whether to recommend an award. The NSTA normally aims to hold the first interview within a short time following the closing date for applications (Applicants should be prepared for this) and the overall timeframe over which interviews will be conducted may depend on the number, and the nature, of applications received.

41. In practice, the NSTA will usually arrange interviews before the results of the fitness assessment and financial evaluations are complete, so Applicants should not assume that an invitation to interview implies that any of those criteria have been satisfied.

42. The main purposes of the interview are to enable the Applicant to present the technical rationale for the application, review the work already carried out, and outline the proposed work programme associated with the Appraisal Term, and for the NSTA to assess the Applicant's technical capability and competence and ask questions and seek any clarifications, before final evaluation. It is expected that Applicant personnel attending the interview will be able to answer technical questions on the application i.e., persons involved in the preparation of the 'Supporting Information' should be at the interview.

43. The NSTA may request additional meetings after the interview if further clarification or understanding is necessary. The interview will *not* address financial aspects as this will be assessed separately through correspondence with the Applicant.

44. All applications for the same area will normally be evaluated by the same NSTA technical assessors for consistency and fairness.

i. Transparency

45. Applicants may need to include commercially sensitive information in their applications, such as financial forecasts and proprietary data. The NSTA does not intend to publish such information, however the NSTA is subject to the requirements of, and will handle any such information in accordance with, the Freedom of Information Act 2000, the Environmental Information Regulations 2004 (2004/3391) and the Data Protection Act 2018 and other relevant law, which take full cognisance of issues of transparency and confidentiality.

46. Due to the potentially competitive aspect of CS Licence awards, the NSTA will treat all applications as confidential until CS Licence award decisions have been announced. Once a CS Licence is signed and dated, the NSTA will publish the licence on its website (redacting as appropriate) and the relevant licence information will be added to the NSTA's Carbon Storage Public

Register[12] as required by the Storage Regs.

47. For the purposes of the Data Protection Act 2018, the NSTA will hold the Applicants' contact details, including the names and email addresses of individuals who are nominated as company contact for licensing issues, and use them in communications relating to the application and in relation to administering any resultant CS Licence awarded. For further information of the NSTA's policy on use and retention of personal information see: North Sea Transition Authority: Privacy Statement (nstauthority.co.uk)

j. How to submit an Application

48. All applications for a CS Licence are to be submitted using the NSTA's Secure File Transfer Portal ('**SFTP**') site.

49. Applicants should access this site via https://sftp.nstauthority.co.uk/login

50. Applicants will need to request a new account specifically for making the appropriate Applications (via the SFTP link above); please clearly indicate this is for a CS Licence application. Applicants are encouraged to request this as early as possible in advance of making their Application and certainly 2-3 weeks before the application closing date.

51. On creation of an account a new folder will be created by the NSTA specifically for the submission of the Application. This will have the following naming convention: - [*CS round or offer name] / [company name]/*

52. Applicants will only be able to see and access the folder allocated to a specific username and password.

53. Where an Applicant is submitting more than one application, they should create sub folders with the naming convention '[*application number] of [total number]' e.g. /app1of3/*

54. Each Application submitted to the NSTA should include the following as a minimum:

a) A completed application form
b) GIS Shape file of application area
c) Storage Site specific map, representative seismic section, and geological cross-section in jpeg format
d) Appendix A Financial (pdf)
e) Appendix B Technical (pdf)

55. Where the Applicant comprises more than one company and each is required to submit separate Appendix A Financial information in support of an application, they should each request an SFTP account and submit their data separately, making it clear which application or applications it relates to.

56. Any application received after the application closing date and time as published by the NSTA, will not be considered, nor will any incomplete applications, including those where Financial Information from all applicant companies has not been received in time.

57. Any questions on the submission of applications should be sent to Offshore.Exploration@nstauthority.co.uk

[12] NSTA CS Licence Public Register

2. Detailed Guidance

a. Introduction

58. All applications must be made on the approved '**Application Form'** and accompanied by '**Supporting Information'** as set out in this section of the guidance. Every application must include:

a) One completed Application Form, including GIS Shape file of area applied for and separate A4 size jpeg files of the top reservoir depth map, seismic section and geological cross-section for each specific storage site

b) The "Supporting Information" documents which comprises:

- **Appendix A Financial**- demonstrating a company's financial capability. (Each Applicant company named in application is required to submit a separate Financial submission).
- **Appendix B Technical** –a technical and commercial evaluation and project plans for the Storage Site.

59. Each application can include more than one storage site, as long as the area applied for within each application is contiguous. Separate applications should be submitted for each non-contiguous area.

b. Application Form

60. The Application Form can be obtained from the NSTA- Licensing & consents web page[13].

61. **Applicants (Part 1)-** provide, for each of the companies making the application, the full registered company name and number and the contact details of the person who will be the primary contact for the application, together with proposed equities and who will act as the exploration operator if awarded (as set out in the terms of the Licence).

62. **Application Area Summary Sheet (Part 2)-** define the area to be applied for using the guidelines set out below.

63. The extent of the application area must match the area offered by the NSTA, or be a subset of the offered area i.e., it cannot be larger or extend beyond the boundaries offered.

64. The application area must be defined by parallels of latitude and meridians of longitude joining the co-ordinate points defined using degrees (°), minutes (') and seconds ('').

65. The parallels and meridians should conform with whole minute lines.

66. The application area should describe the full extent of the area where the Applicant intends to exercise any rights that may be granted under a CS Licence, in accordance with section 18 of the Act (as amended), and should therefore take account of the potential activities necessary to select a site for the storage of carbon dioxide, the use of a controlled place for the storage of

[13] North Sea Transition Authority (NSTA): Carbon storage - Licensing

carbon dioxide, and other activities which may include:

(a) exploration (including for example seismic acquisition, drilling of wells and test injection of carbon dioxide)

(b) storage of carbon dioxide with a view to its permanent disposal, including ancillary monitoring, and

(c) the establishment or maintenance of installations for exploration, storage and monitoring purposes

67. The application area should encompass the full extent of the geological feature(s) that relate to the proposed storage site and complex down to the structural spill point or maximum area of CO_2 plume distribution in the case of unconfined aquifers, including sufficient margin to take account of the full range of depth uncertainty.

68. The boundaries for offshore areas (out with the three nautical mile limit) east of the meridian six degrees west follow a latitude and longitude graticule based upon the geographical co-ordinate system ED50 (European Datum 1950). The boundaries of offshore areas (out with the three nautical mile limit) west of the meridian six degrees west follow a latitude and longitude graticule based upon the geographical co-ordinate system ETRF89 (European Terrestrial Reference Frame 1989)[14].

69. A GIS Shapefile of the application area, in the appropriate coordinate reference system should also be supplied.

70. **Specific Storage Site Details (Part 3)-** as part of the evaluation, each proposed individual storage site identified in the Application will be marked separately by the NSTA (see Annex 1 CS Marking Scheme). Therefore, each storage site should be identified and named separately. The storage site resource calculation inputs and output parameters should be provided, and the subsurface risks and legacy wells associated with each proposed storage site should be summarised. The methodology for calculating storage resource and injectivity estimates, may vary between applications. Applicants are therefore asked to complete the storage site resource table as fully as possible. Dependent on the methodology used, not all attributes are required to be supplied. More details on methodology and justification for inputs should be made in the Technical Appendix B document.

71. To assist the NSTA in evaluating the application, the Applicant must provide for each identified specific storage site, separate A4 size jpeg files of:

(a) a fully labelled top depth structure map of the storage formation (reservoir), with a clearly defined contour interval, at 1:100,000 scale (or other appropriate scale) showing the proposed boundary and any other relevant information, including scale, north arrow, and graticule.

(b) a representative interpreted seismic section; and

(c) a separate geological cross-section.

72. **Work Programme Summary Sheet-** Only provide details of the main data acquisition or geoscientific/engineering studies and levels of commitment, to be offered as part of the proposed Work Programme for each individual specific storage site (in the Application form):

- **Wells:** Include the number of exploration or appraisal

[14] Guidance Note on use of coordinate system

wells for the proposed storage site. Details of the target depth and stratigraphic formation (minimum depth) to be penetrated should be discussed and summarised in the Technical Appendix B. Include any proposed data acquisition or well injectivity/productivity tests.

- **Seismic data:** Give the amount of 2D (in line kilometres) or 3D seismic (area of full migration, in square kilometres) to be acquired over the area. Where the data covers more than one storage site, proportion the gross length (2D) or area (3D) between each storage site applied for in the Application. Distinguish between acquiring (shooting) new data and obtaining existing data (whether by purchase or other means). Include an outline of any reprocessing programme.

- **Other work:** A brief summary of any other work not already described – such as seabed, shallow strata, and seep surveys, research, technological development studies relevant to the evaluation of the area or engineering studies (e.g. geotechnical studies, gravity or magnetic surveys, electromagnetic seabed logging, reservoir engineering, FEED).

73. A more detailed description of the proposed work programme including type of seismic to be acquired/obtained and specific reprocessing details should be given in the Technical Appendix B.

74. **CS Storage Project Summary (Part 4)-** provide a brief summary of any associated projects and infrastructure elements associated with the application (e.g. onshore cluster projects, industrial CO_2 emitters, pipelines/transportation networks, petroleum facilities, carbon storage or petroleum licences, etc) and the nature of the link between the Application and those projects. Details to be given in Technical Appendix B

c. Supporting Information - Financial Appendix A

75. Applicants must demonstrate that they have the financial capability to exercise the exclusive rights granted by the licence.

Each Applicant company whether the lead company or otherwise, must provide Financial information separately, giving sufficiently detailed to enable the NSTA's financial capability assessment to be undertaken. For further information please see the NSTA's Financial Guidance[15], or send questions to Licensee.Finance@nstauthority.co.uk

d. Supporting Information - Technical Appendix B

76. Information provided as part of the Technical Appendix B will considered in accordance with the CS Marking Scheme.

77. There is no specific document format for the Technical Appendix B;

[15] NSTA Financial Guidance

however, it should include as a minimum:

- **Geotechnical database** - A description of the available geotechnical data and its quality over the application area and specifically those data that have been used in the geotechnical evaluation.
- **Geotechnical Evaluation**- A summary of the geotechnical evaluation performed to date, including an evaluation and methodology on the CO_2 storage resource calculation, storage efficiency and injection rates for each Storage Site proposed.
- **Subsurface Risk and Hazard assessment** - analysis of the preliminary primary and secondary containment and injection risks for each specific Storage Site proposed, including a discussion on any studies or monitoring that may be required to mitigate any containment, capacity and legacy well risks identified. Identify all existing well boreholes associated with the storage site and complex, detailing the current mechanical status and where appropriate; provide information on the sub-surface isolation (casing, cementation and plugs). Where this is not known, indicate what further actions will be taken to reduce this risk.
- **Above-ground evaluation** – A summary of the commercial and infrastructure elements related to the application, including the proposed CO_2 supply. This should include both the base case and wider development concept being considered, outlining the transportation, facility, well options and associated CO_2 phase management engineering considerations. Identify key project risks including spatial planning considerations of other seabed users, as well as potential co-location conflicts and opportunities. Outline any areas that may need further technical work or studies and how this will be addressed in the Appraisal Term.
- **Proposed work programme -** the proposed work programme with commitment levels for each of the four stages in the Appraisal Term (early risk assessment, site characterisation, assess and define - see paragraph 90) should be defined with a proposed schedule. The work specified in the work programme may consist of elements such as (but not limited to) studies, non-intrusive geophysical survey work, engineering planning (e.g., FEED) or drilling, or any appropriate combination. It should be sufficient to address the main risks and uncertainties, and to enable the Applicant, if it wishes to do so, to submit within the Appraisal Term of the CS Licence a storage permit application that is capable of being approved.

- **Technology plan**[16] –An outline of the technologies deployed (or to be deployed) to address specific issues in the evaluation, operation and monitoring of the storage project and their Technology Readiness Levels (TRLs), with the identification of potential technology gaps and adequate plans to address these, where appropriate.
- **Organisational capability**- give details of the organisational structure and any relevant project and technical experience including any specific carbon storage (or transferrable) experience and competency of the proposed exploration operator.
- **Net zero considerations**- A summary of how greenhouse gas ('**GHG'**) emissions will be minimised throughout the CS Licence lifecycle in support of the UK government's 2050 net zero target. This should include an indicative evaluation of the GHG emissions impact of any work programme and proposed CS Licence lifecycle, and a summary of how the exploration operator will demonstrate its commitment to reduce GHG emissions through its corporate culture and demonstrable action through all stages of a project lifecycle. Whilst not directly applicable to carbon storage projects, the NSTA considers that its Net Zero Stewardship Expectation SE11[17] provides useful guidance in this regard.
- **External Engagement** - A summary of the engagements, either held or planned, including potential other users of the area applied for (petroleum licences, wind farms etc). Specifically include the status of discussions with TCE/CES to obtain an Agreement for Lease.
- **Development Schedule**- An indicative project schedule, including proposed timing of first injection and the likely phases of development; project plan and timeline including licence term length, feasibility and schedule-alignment with CO2 storage permit guidance.
- **Project Delivery Uncertainty** – Provide a summary of any commercial or other conditionality or interactions, including with other users or potential users of the application area and surrounding area e.g., wind farms, petroleum licensees, that may impact the proposed scheduled delivery of the work programme and/or a

[16] The NSTA must have regard to '*The need to encourage innovation in technology and working practices in relation to relevant activities*' - Energy Act 2016, section 8.

[17] Stewardship Expectation 11_net-zero.pdf

Storage Permit Application and the associated storage operations.

e. Elements of a CS Licence Work Programme (Appraisal Term)

78. A work programme will form part of the Appraisal Term requirements and will be set out in the CS Licence.

79. The work programme consists of appropriate commitments to the NSTA to carry out any necessary preparatory exploration, appraisal, or other work, to inform and support the potential submission of a Storage Permit application within the Appraisal Term.

80. A summary of the Applicant's proposed work programme should be set out in the Application form with a more detailed description and justification in the Supporting Information Technical Appendix B. It may be discussed and clarified at any interview.

81. The work programme may consist of non-intrusive activities such as geophysical survey work, seabed surveys (e.g. shallow sediment sampling, multi-beam echo sounder, side-scan sonar, P-cable), subsurface studies and modelling, engineering planning (e.g. FEED) or intrusive activities such as drilling, or any appropriate combination. The work programme should be sufficient to resolve any outstanding uncertainties and enable the applicant to put forward a Storage Permit application that is capable of being approved within the Appraisal Term. In general, the specified elements of the programme should be definite commitments – if any elements are contingent on other events or the acquisition of further information, this should be explained clearly.

82. If the Applicant is not proposing a work programme, as it only wishes to hold a CS Licence to prepare and submit a Storage Permit application, a CS Licence may be awarded with an "Initial Term" and not an Appraisal Term. The NSTA's general presumption is that a work programme will be required prior to any Storage Permit application, however it is recognised that as the industry develops an Initial Term may be appropriate in certain circumstances.

83. Elements of the work programme will normally be a firm commitment or may in certain cases be contingent.

84. **Firm Commitment** is a licence obligation – a contractual commitment to the NSTA to perform that element of the work programme. The NSTA reserves the right to consider any failure to meet a Firm Commitment, unless previously agreed by the NSTA, as poor licensee performance, and failure to carry out the work programme may result in the revocation of the licence.

85. **Contingent Commitment** is also a commitment to the NSTA to perform an element of the work programme, but it includes specific provision for the NSTA to agree that the activity need not be carried out if the NSTA considers that the requirement for that element is no longer appropriate. If the licensee considers the Contingent Commitment is no longer necessary, they must request such agreement in writing, no later than three months before the specified deadline for that commitment, providing technical and, where appropriate, economic justification for the request.

86. **Seismic data:** Applicants should consider whether a new seismic survey is required for the evaluation and development of the site and/or Measurement, Monitoring and Verification of CO_2 storage and when the optimum time for a new acquisition would be. Where

applicable, the amount of seismic data (whether 2D (in full fold line kilometres) or 3D seismic (area of full fold migration, in square kilometres)) to be acquired over the area should be stated, distinguishing between **acquiring** (shooting) of new data and **obtaining** existing data (whether by purchase or other means). A description of any further acquisition of data outside the area should be provided, noting how it relates to the application area. Applicants should indicate whether any new data will be **proprietary** or **speculative/ multiclient** (and the degree to which underwritten), purchased or traded. Preference and higher marks will normally be awarded for proprietary acquisition. Applicants should include an outline of any planned reprocessing programme and indicate the timing and type of any proposed activity. Applicants should also make clear where any seismic used for the interpretation has not yet been purchased, and, if reprocessing is to be carried out and whether access rights to readable, verified, or re-mastered field tapes have been secured.

87. **Well:** Applicants should consider whether a new exploration or appraisal well will be required during the Appraisal Term and when, particularly for potential sites that are not depleted hydrocarbon fields, to reduce uncertainty on reservoir and seal properties and establish injectivity. Where proposing a well, Applicants should confirm whether the well is a Firm or Contingent commitment and define the proposed target formation and Total Depth ('**TD**') and, if contingent, what the criteria for the contingency are.

88. If the NSTA offers a CS Licence, the offer will set out any work programme to be included in the CS Licence. Where a work programme is set out in an offer, the Applicant will be expected to accept (or not) the offer on such basis and will not be able to make further amendments (other than minor amendments, for example to correct factual inaccuracies) to the work programme at this stage. The defined work programme will normally be based on what was put forward in the application and discussed in the interview, and may include any modification that the NSTA considers appropriate in its decision process to award. Once the offer is accepted, the work programme will be set out in full in a schedule to the CS Licence.

89. Note that the completion of the work programme will not in any way guarantee that a Storage Permit will be granted. The Storage Permit guidance provides more information on applying for a storage permit.

90. In general, the NSTA will divide the Appraisal Term into four distinct stages, each with associated work programme activities and a formal Stewardship engagement process. They are:

Exploration and Appraisal:

I. **Early Risk Assessment** (Identification of the critical risks, project and engagement plan)

II. **Site Characterisation** (Definition of the proposed Storage Site and Complex, Geophysical surveys, exploration & appraisal wells)

Assess and Define:

III. **Assess** (Initial Field development planning, including Development drilling, Construction & Commissioning, where applicable)

IV. **Define** (Storage Permit Application submission)

I. Early Risk Assessment – Potential threats to containment and key uncertainties in defining the proposed

Storage Site and Storage Complex should be defined early in a licence in order to identify risk reduction measures and the need for further studies, data gathering and/or appraisal. The results of this early risk assessment will identify the need for additional data gathering or appraisal and inform the requirements for Measurement, Monitoring and Verification ("**MMV"**) and Corrective Measures ("**CM**") plans as part of any future Storage Permit Application.

The work programme at this stage may include but not be limited to;-

- **Data acquisition**: an early firm or contingent commitment to reprocess, shoot or obtain new seismic data and or the drilling of one or more Exploration/ Appraisal wells.

- **Early Risk Assessment Report:** containing an analysis of potential threats to containment and the key uncertainties in defining the proposed Storage Site and Storage Complex. It should also demonstrate that all relevant existing accessible data are compiled and interpreted - if not, then a plan should be presented on how the remaining existing and new data will be integrated. Where a licensee has historic knowledge of operating a now-depleted hydrocarbon field, they should demonstrate how the site-specific primary data has been integrated in the appraisal of the proposed Storage Site and Complex.

- **Early Risk Assessment Workshop:** to be held towards the end of the stage with relevant Peers and the NSTA to review and discuss the work to date and plans for the next stage.

For further examples of the type of analysis and information to be considered please see the *Implementation of Directive 2009/31/EC on the geological storage of carbon dioxide – Guidance document 1- CO2 storage life cycle risk management framework*[18].

II. Site Characterisation - All site-specific primary data, including rock and fluid properties of the reservoir; characterisation of the seal, geomechanics and fracture pressure analysis, geochemistry, PVT and RelPerm analyses should be integrated into an evaluation of the proposed site. The evaluation should include but not be limited to seismic interpretation, attribute analysis, structural modelling and depth conversion. Basic reservoir modelling should be completed as proof of the initial concept, which will include results of detailed Site characterisation studies and any new seismic or well data, including multiphase modelling to predict the injection capability at the volumes required and CO_2 plume behaviour at the Storage Site. Geomechanical characterisation should be conducted to evaluate confining zone integrity as well as that of secondary reservoirs and enable the setting of safe operational parameters.

The work programme at this stage may include but not be limited to;-

- **Data acquisition:** The work programme during this stage might include a

[18] Implementation of directive 2009/31/EC on the geological storage of carbon dioxide - Guidance document 1, CO2 storage life cycle risk management framework

firm or contingent commitment to reprocess, shoot or obtain new seismic data and or the drilling of one or more Exploration/Appraisal wells.

- **Site Characterisation Report:** a preliminary report demonstrating the results of the seismic interpretation, including structural interpretation attribute analysis and depth conversion. An assessment of the hydraulic communication between the proposed Storage Site and other permeable horizons (incl. secondary storage horizons) including fault juxtaposition diagrams, fault seal analysis, and evaluation of the heterogeneity in sealing properties along a fault juxtaposition; and identification of impermeable baffles or barriers within the Storage Site. Analysis of the sealing capacity of the storage Site and of secondary seals including detailed characterisation of the caprock, capillary entry pressures and geomechanics and fracture pressure analysis. Static 3D modelling of the Storage Site and Complex, probabilistic pore space and CO_2 Storage resource estimation.

- **Above Ground Evaluation Report:** a preliminary assessment of the CO_2 Transportation and Injection Facilities: Outline of pipeline, facility and well options being considered and associated CO_2 phase management engineering considerations. Demonstration of early engagement with other interested parties that might be affected by the proposed appraisal and development activities.

- **Site Characterisation Review :** to be held towards the end of this stage with the NSTA to review and discuss the work to date and plans for the next stage.

For further examples of the type of analysis and information to be considered please see the *Implementation of directive 2009/31/EC on the geological storage of carbon dioxide Guidance document 2- characterisation of the storage complex, CO2 stream composition, monitoring and corrective measures*[19]

III. Assess- the Assess Phase review provides assurance that the technical work is at a stage to allow progression into the Define phase and optimisation of the Carbon Storage Development Plan, including characterisation of the Storage Site and Storage Complex.

The work programme at this stage may include but not be limited to:

[19] Implementation of directive 2009/31/EC on the geological storage of carbon dioxide - Guidance document 2, characterisation of the storage complex, CO2 stream composition, monitoring and corrective measures

- **Characterisation of Storage Site and Complex Report:** including the final results of the subsurface characterisation of the three-dimensional Storage Site and Storage Complex; migration models for the Site and secondary permeable horizons and potential leakage points; dynamic models including sensitivities and full uncertainty analysis and range of contingent storage volumes; composition of CO_2 stream. High level outline of the CO_2 transportation and injection facilities.

- **Risk Assessment:** provide to the NSTA the preliminary containment and injection risk assessment, highlighting the preventions and mitigations for each event and remaining work required to finalise the Containment Risk Assessment.

- **Measurement, Monitoring and Verification ('MMV')**: provide to the NSTA the preliminary MMV assessment for the storage Site and Complex based on the preliminary Risk Assessment.

- **Corrective Measures** ('**CM**') **Plan**: provide the NSTA with a preliminary CM feasibility study based on the MMV assessment detailing the appropriate steps to be taken if a significant irregularity, risk of leakage or migration pathway is identified

- **Provisional Closure and Post Closure Plan**: provide to the NSTA a provisional Closure and Post Closure Assessment study to address the abandonment of the injection facilities, the post closure monitoring and how the requirements for allowing handover will be met.

- **Financial Security**: provide the NSTA with an early assessment of the risks and liabilities for which financial security will need to be in place prior to first injection, in order to cover the relevant liabilities.

- **End Assess Review meeting** to be held with the NSTA towards the end of this stage to review and discuss the work to date and plans for the next stage.

IV. Define – (Storage Permit Application Submission); - The work programme at this stage should include the submission of draft copies for comments by the NSTA and external stakeholders of the following documents required for Storage Permit application; -

1. Storage Site and Complex Development Plan
2. Containment Risk Assessment
3. Measuring, Monitoring, and Verification Plan
4. Corrective Measures Plan
5. Provisional Closure and Post-Closure Plan
6. Financial Security

- **End Define Review meeting** to be held with the NSTA towards the end of this stage to review and discuss the work to date, any remedial work required, and plans for the next stage

91. The Applicant should define the length of the Appraisal Term. This should not exceed the period necessary to generate the appropriate information to select a storage site and prepare the required documentation at each stage.

92. As part of the stewardship process additional milestones may be agreed between the NSTA and Applicants at the time of award of the licence to demonstrate to the NSTA that appropriate progress is being achieved within the timeframe of the Licence. These will not be incorporated into the Licence but set out in a side letter.

f. Exploration Operator Competence

93. NSTA will not issue a CS Licence other than to a competent **exploration operator**, or to a group that includes an approved exploration operator. This evaluation will be based on the information provided in the Organisational Capability section of Appendix B, and the NSTA will look at the governance structure, systems and technical competence of the company to plan and perform offshore CS Licence operations. For further information on the requirements for exploration operatorship, please refer to Annex 2 (Exploration Operator Guidelines) of this document, where applicable

94. Please be aware that at the Storage Permit application stage, the permit Applicant must satisfy the NSTA that the **Permit Operator** (referred to in the Storage Regs as the 'operator', that is the person who carries on or controls activities at the storage site) is technically competent in respect of the Storage Permit activities.

g. Appropriate Assessment under the Habitats Regulations

95. The NSTA cannot grant a CS Licence unless it has first received the agreement of the SoS under the Habitats Regulations.

96. OPRED have advised that where the SoS considers that anything that might be done or any activity which might be carried on under a CS Licence is likely to have a significant effect on a relevant site (whether individually or in combination with any other plan or project), the SoS shall make an appropriate assessment ('AA') of the implications for the relevant site in view of the site's conservation objectives. Subject to the conclusions of the AA, the SoS would only agree to the grant of a CS Licence provided the SoS is satisfied that nothing that might be done or no activity which might be carried out under the CS Licence would have an adverse effect on the integrity of the relevant site.

97. For further information on the AA process, Applicants should contact OPRED at bst@beis.gov.uk.

ANNEX 1
The Carbon Dioxide Appraisal & Storage Licence Application Mark Scheme

The Carbon Dioxide Appraisal and Storage Licence Application Mark Scheme ('**CS Marking Scheme**') is focused on considering the viability of the overall CO_2 storage project, evaluating the maturity of any Site Characterisation work & Risk Assessment and assessing the appropriateness of the proposed work programme such that Licensees are capable of submitting a successful Storage Permit application by the end of the Initial/Appraisal Term.

The CS Marking Scheme will be used to mark each of the individual storage sites identified in the Application and will be used as a guide rather than an absolute factor in the NTSA decision making. In some cases, the NSTA may consider that factors not covered by, or amenable to, the CS Marking Scheme may be relevant to informing the recommendation (see section *g. How Decisions are Reached* in document above). Under the Energy Act 2008 the NSTA has discretion in deciding whether to issue a licence and, if so, to whom and on what conditions.

The CS Marking Scheme consists of multiple sections (the marks scheme summary is presented at the end):

- **Geotechnical Database used for application:** Marks will be available for the geotechnical data used (including newly gathered data) in the application. The NSTA will consider the quality of the data utilised compared with what we know to be available in the area, and Applicants must demonstrate that they have considered all publicly and commercially available datasets that are relevant to the application, with a justification of the choice of dataset used in the evaluation. Where a licensee has historic knowledge of operating a now-depleted hydrocarbon field, they should demonstrate the incorporation of site-specific primary data. Data from outside the area (to provide regional context) will be rewarded where it has been utilised to demonstrate improved understanding of the Storage Site or Storage Complex.
- **Geotechnical Evaluation Already Performed over Area**: Marks will be available for the quality and understanding demonstrated of the regional interpretation over the area and particularly the Storage Site and Complex. This should include regional well interpretations and correlations; stratigraphic and sedimentological/depositional analysis; regional structural interpretation; seismic well ties; seismic time and depth mapping including a description of the depth conversion methodology; regional aquifer flow and connectivity. Applicants should not expect to be rewarded for speculative, overly optimistic or unsupported analysis.
- **Geological Site & Storage Complex Analysis including Primary and Secondary Containment**: Marks will be available for the quality and maturity of the Site Characterisation analysis on the specific Storage Site and associated Storage Complex. This must include assessment of the primary and secondary containment mechanisms. This should include petrophysical rock and fluid properties analysis; geochemistry (interaction of CO_2 with reservoir/seal); seismic attribute analysis; detailed structural interpretation and analysis to understand the validity of the trap and the impact of faulting on structural integrity and potential leak paths; CO_2 migration mapping & hydrogeology/plumbing including other subsurface fluid movement, assessment of the hydraulic communication between the Storage Site and other permeable horizons; geomechanical analysis of the reservoir and primary and secondary seals, including capillary entry pressures and geomechanics and fracture pressure analysis; existing well bore containment analysis; Static and Dynamic

modelling as supported by available interpretation and data. Relatively few marks will be given in situations where the geotechnical analysis draws heavily on non-original work e.g. derived from publications, relinquishment reports, or material derived from other sources.

- **CO_2 Storage Resource, Efficiency, and Injectivity Estimates**: Based on the above geotechnical evaluation, applicants should demonstrate the methodology and results of any estimates of CO_2 storage resource (capacity), storage efficiency and injectivity rates. Higher marks will be awarded where there is a clear demonstration of a fully integrated dataset with a range of low/medium/high or probabilistic cases. Applicants should summarise were the main areas or uncertainty occur in estimates, the reason for this uncertainty and what, approach will be taken to reduce these uncertainties during the Initial/Appraisal Term.
- **Subsurface Risk and Hazard Assessment:** Marks will be awarded to Applicants that demonstrate analysis of the preliminary primary and secondary containment risks for the Storage Site(s) and Complex, and injection risks for each Storage Site identified, including legacy well abandonment risk assessment; reservoir pressure assessment & CO_2 phase management risks. As a minimum, the major risks to storage will be identified and data gaps highlighted, and the need for further studies, data gathering and/or appraisal discussed.
- **Above-Ground Evaluation & Project Planning:** Marks will be awarded where Applicants can demonstrate a summary of the commercial and infrastructure elements related to the application. This should include both the base case and wider development concept being considered, outlining the transportation, facility, well options and associated CO_2 phase management engineering considerations. It should also cover the status of alignment with The Crown Estate or Crown Estate Scotland CO_2 Policy/ ability to obtain an Agreement for Lease; CO_2 source assessment (evaluation of mass of CO_2 available to project); economics & cost; commercial analysis; infrastructure assessment including pipelines, platforms, wells; infrastructure re-use; regulatory & stakeholder engagement plan; identification of key Project Risks including spatial planning considerations of other seabed users, as well as potential co-location conflicts and opportunities; Project Plan & Timeline including licence term length, feasibility and Schedule alignment with CO_2 storage permit guidance.
- **Work Programme:** As part of the proposed Work Programme Applicants are required to consider the four distinct stages (*Early Risk Assessment, Site Characterisation, Assess & Define*) of the Appraisal term and define the proposed work programme with commitment levels and a proposed schedule for the four stages. Marks will be awarded to those applicants that commit to new activity that may address risk and uncertainty, including subsurface assessment of geological storage site & complex; wellbore containment assessment; seismic acquisition and/or reprocessing, indicating if this will be proprietary or multiclient; exploration/appraisal well/ injection tests. Higher marks will be awarded for higher levels of commitment and proprietary data (see section 'The Elements of CS Licences Work Programme' in guidance documentation for discussion on commitment levels).
- **Technology Plan:** Marks will be awarded for the technologies which have been used or identified to address critical areas of a CS development project and their Technology Readiness Levels, where appropriate.
- **Organisational capability**: Marks will be awarded based on the level that that the Lead Applicant/Operator can demonstrate their CS organisational capability. This should cover project governance, organisation and context of where the project sits within the wider organisational structure. Including any specific experience and track

record of involvement in/ delivery of CO_2 storage projects (or transferrable experience). Where this competence may not be in place at the application stage, the Applicant will have to convince NSTA that it knows what company structure, skills, and management systems are required and that it has a management team capable of delivering it. Information should demonstrate the capability and competence required to deliver a permit application capable of approval by the NSTA. Where the Applicant does not have the in-house capability and competence, they should explain how they propose to achieve that capability and competence.

- A condition of issuing a storage permit is, among a number of other things, that the proposed operator has in place an appropriate programme of professional and technical development and training (see Regulation 7 of the Storage Regs). Applicants should also note relevant People and Skills obligations set out in the North Sea Transition Deal, and as part of this, it is also expected that, where appropriate, licensees will undertake and support Higher Education Institution Research ('**HEI**') (e.g. PhDs / Postdocs) and Collaborative Regional Studies as part of the proposed work programme. Where new research and studies are relevant to licence activities or furthering the understanding of the licence area, marks may be awarded for these. HEI Research may be via one of the Centres for Doctoral Training, such as the GeoNetZero CDT (https://geo-net-zero.hw.ac.uk/) or other individual, recognised, higher education institutions or bodies.

The Carbon Dioxide Appraisal & Storage Licence Application Mark

Geotechnical Database Used

3D Seismic (Coverage & use) †	40 (max)*
2D Seismic (Coverage & use) †	10 (max)
New Seismic Reprocessing	20 (max)
Well Data	10 (max)
Other Geotechnical and Engineering Data and Studies	20 (max)

Geotechnical Evaluation already performed over application area

Well interpretation / ties (e.g. Synthetics)	5 (max)
Stratigraphy & Sedimentology	5 (max)
Structural Interpretation	5 (max)
Time and Depth Interpretation	5 (max)
Other Geotechnical and Engineering analysis	5 (max)

Geological Site & Storage Complex Analysis including primary & secondary storage

Petrophysical rock and fluid properties & Geochemistry	10 (max)
Seismic Attribute Analysis	10 (max)
Structural Interpretation & Validation (Store Geometry)	10 (max)
CO_2 migration and other reservoir fluid mapping & hydrogeology/plumbing	10 (max)
Seal & Preservation including Geomechanics of overburden & side-seals	10 (max)
Static geological model	10 (max)
Dynamic Reservoir model	10 (max)

CO_2 Storage Capacity, Efficiency & Injectivity Estimates

CO_2 Storage Capacity Assessment	30 (max)
CO_2 Injection Rate Assessment	30 (max)

Subsurface Risk and Hazard Assessment

Legacy and well abandonment risk assessment	30 (max)
Reservoir Pressure Assessment & CO_2 Phase Management	30 (max)
Overall Containment Risk	30 (max)

Above-Ground Evaluation & Project Planning

CO_2 Source- evaluation of mass of CO_2 available to the project	20 (max)
Economics & Cost Assessment	10 (max)
Commercial Analysis	20 (max)

Infrastructure and re-use assessment including pipelines, platforms, wells	10 (max)
Spatial Planning, Regulatory & Stakeholder Engagement Plan	20 (max)
Project Risk Assessment	20 (max)
Overall Project Plan & Timeline	10 (max)

Proposed Work Programme

Subsurface Assessment of Storage Site & Storage Complex	20 (max)
Seismic Acquisition/Reprocessing - Firm *ϐ*	60 (max)
Seismic Acquisition/Reprocessing - Contingent *ϐ*	20 (max)
Exploration/Appraisal Well/Injection Tests - Firm	100 (max)
Exploration/Appraisal Well/Injection Tests - Contingent	40 (max)
Additional Geotechnical and Engineering Studies	40 (max)
Initial/Appraisal Term Plan with timings and deliverables ‡	30 (max)

Technology Plan

Screening of Existing Technologies for Proposed License §	20 (max)
Gap Analysis and Opportunity Identification	5 (max)
Action Plan – Firm vs. Contingent	5 (max)
Knowledge Sharing	5 (max)

Organisational Capability

Organisational Capability, Professional and Technical Training & Development	30 (max)

Notes:

* *Where the term (max) is used, marks will be awarded from zero up to that maximum figure.*

† *Use of the best available/most-modern/optimum seismic datasets will attract more marks. (This will consider both processing and acquisition parameters). Applicants should demonstrate that they have assessed all publicly and commercially available seismic datasets, and justify their choice/the value of this information in relation to how these data address the critical risks and reduce subsurface uncertainty.*

‡ *Faster work programmes will generally attract higher marks than slower work programmes, provided they are backed by a credible plan.*

§ *Applicants should make clear how all activities, studies and research it proposes (including Technology Plans) are relevant to: i. the way in which the licence activities will be carried out, and/or ii. to the applicant's technical capability. If the NSTA considers that such proposals are not relevant, then no marks will be awarded for them.*

ϐ *Proposed work programmes consisting of proprietary data which will be publicly available on shorter release timescales will attract more marks.*

ANNEX 2
Exploration Operator Guidelines

Purpose of these guidelines

These guidelines are provided to assist companies who wish to seek approval as an exploration operator ('**Exploration Operator**') under a Carbon Dioxide Appraisal and Storage Licence ('**CS Licence**'). An Exploration Operator is set out under the relevant CS Licence as someone who exercises *any function of organising or supervising any exploration activity* within the Appraisal/Initial Term of a CS Licence.

The current licensee(s) are responsible for the application to the NSTA of who they wish to appoint as Exploration Operator, subject to NSTA approval.

This role is separate to the role of a Storage Operator under a Storage Permit (granted under a CS Licence), guidance on which is set out in the NSTA's *Guidance on Applications for a Carbon Storage Permit*[20].

Where there is a proposed change to an Exploration Operator as a result of a CS Licence Transfer, applicants are also referred to the NSTA's *Carbon Dioxide Appraisal and Storage Licence Transfer and Change in Control Approach*[21].

These guidelines are designed to help companies understand the information that the NSTA will require to consider in an Exploration Operator application. The NSTA will consider whether a proposed Exploration Operator is competent with respect to organising or supervising any activity within the Appraisal/Initial Term.

The NSTA notes that under the petroleum licensing regime licensees may appoint a "Licence Administrator" who acts as a sole focal point for certain communications between the licensee and the NSTA. There is currently no equivalent function in connection with CS Licences. Therefore, in general the NSTA expects the appointed and approved Exploration Operator to fulfil this function acting on behalf of the licensee(s).

The NSTA may consult with other licensee(s) where it considers appropriate, including, but not limited to, where there may be misalignment between licensees or where the NSTA is considering the governance or fitness of a licensee.

The NSTA understands that the development of the carbon capture and storage industry, and the requirements of other regulators, may lead to the creation of different corporate structures to operate the CS Licence; in particular this could be a newly established Incorporated Joint Venture or other Special Purpose Vehicle ('**IJV/SPV**') rather than an established single company or unincorporated joint venture. The NSTA will consider each structure on a case-by-case basis in line with the underlying regulatory regime and applicable guidance at the time.

If an Exploration Operator is approved, it should not be taken that the NSTA will approve the same entity as Storage Operator at the time a Storage Permit is granted. Guidance on the NSTA's requirements on Storage Operators can be found in the NSTA's *Guidance on Applications for a Carbon Storage Permit*[22]

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[20] Guidance on the application for a Carbon Dioxide Appraisal and Storage Licence (nstauthority.co.uk)

[21] https://www.nstauthority.co.uk/media/jqcdptsm/cs-licence-transfer-and-change-in-control.pdf

[22] Guidance on the application for a Carbon Dioxide Appraisal and Storage Licence (nstauthority.co.uk)

General Guidance

The prospective Exploration Operator must be able to demonstrate that they can satisfactorily fulfil their obligations within the Appraisal/Initial Term of the CS Licence. These include but are not limited to:

- demonstrate technical competence (including adequate resourcing and the operation of an environmental management system suitable for the operations to be undertaken in the Appraisal/Initial Term);
- demonstrate the capability to plan, supervise, manage and undertake the activities under the Appraisal/Initial Term in the CS Licence, including (but not limited to) stakeholder engagement, project governance, management and organisation and commercial activities;
- demonstrate an understanding of the licence commitments and obligations and how the appointment of the Exploration Operator will facilitate these;
- have an appropriate programme of training and development for staff;
- reliably carry out the functions of an Exploration Operator; and
- demonstrate financial capability.

Senior staff at the entity applying to be an Exploration Operator must demonstrate their ability to give leadership to their teams and be supported by an effective management structure and system, and an established group of experienced, skilled staff. The Exploration Operator would normally be expected to demonstrate the skills and experience gained from comparable projects and developments elsewhere, whether carbon storage, hydrocarbon production and/or other comparable projects. A substantial use of contracted staff, including those covered by a Service Level Agreement with a related entity to the Exploration Operator, would need to be justified, and the Exploration Operator would need to demonstrate they have the specialist skills to manage and lead the contracted staff successfully.

It should be noted that Exploration Operator approval is required for each individual CS Licence, i.e., it should not be assumed that where an entity is approved to be the Exploration Operator under one CS Licence that it will be automatically approved under any additional CS Licences.

Technical competence

Exploration operatorship requires a unique level of technical competence given the emerging nature of the carbon storage industry in the UK and the associated challenges of developing an industry of this kind. The proposed technical staff structure should be described carefully, specifically the role of any contractors in the decision-making process. It is crucial that Exploration Operators maintain sufficient in-house staff to clearly understand, organise and supervise activities in the Appraisal/Initial Term of the CS Licence. The NSTA will need to understand the rationale for choosing external expertise over in-house competence, and Exploration Operators need to be able to demonstrate the relationship they have with external companies.

The NSTA is aware that, given the nature and lifecycle of prospective carbon stores, the company ownership structure of the entity holding the CS Licence and/or the proposed Exploration Operator might evolve as the Appraisal/Initial Term progresses. Therefore, the Exploration Operator should engage with the NSTA to understand the technical competency requirements at the key CS Licence milestones. The UKCS operatorship experience of key technical staff should be described, as should any staff's carbon storage experience elsewhere in the world.

Exploration Operators should have in place an appropriate programme of professional and technical development and training for their staff. The NSTA considers that this should extend to any seconded or contractor staff. The details of this process and its objectives should be presented as part of an application to become an Exploration Operator.

Governance

The prospective Exploration Operator will need to demonstrate their independence in carrying out or controlling the activities under the licence, including acting promptly to meet the requirements of the CS Licence and the applicable law and regulations, as well as cooperating with the NSTA on such regulatory matters in a timely fashion. The prospective Exploration Operator should identify which corporate governance code they intend to comply with. The NSTA's current guidance on corporate governance for offshore oil and gas licensees should be referred to[23] as the principles are equally applicable to carbon storage.

Good corporate governance is essential to a company's success, and to that end the NSTA would expect an appropriate balance of non-executive and independent non-executive directors ('**NEDs**') on the Exploration Operator's board to ensure that no one individual or small group of individuals dominates the board's decision making. Independent NEDs can provide constructive challenge, foster independent decision making and mitigate potential conflicts of interest. This is expected to be equally important where the prospective Exploration Operator is structured as an IJV/SPV; understanding the Shareholder Agreement and/or other governance documents will be important in this regard.

The 'fitness' of licensees, Directors and individuals involved in the management of licensees, as well as those who control licensees is critical to the NSTA's statutory duties and objectives. Such persons in respect of the prospective Exploration Operator must have knowledge of, and comply with, the NSTA's requirements as to 'fitness'. Prospective Exploration Operators should refer to the *NSTA's general approach to assessing the 'fitness' of licensees, Directors of licensees, and individuals involved in the management of licensees; and of those who control licensees* [24].

Shareholder disputes can sometimes act as an obstacle to timely compliance with regulatory and legal obligations, or the smooth running of operations, therefore, the proposals for licence management by the prospective Exploration Operator should be outlined with specific reference to how this is dealt with (e.g., in a Shareholder's Agreement). This information is particularly important given the developing nature of the carbon storage industry, and in this case the management arrangements (including, but not limited to, the proposed regularity of Operating and Management Committee Meetings) should be explicitly set out.

Financial capability of the Exploration Operator

The NSTA will undertake a financial review as part of an application to become an Exploration Operator. For more information relating to licensee financial capability and security please contact licensee.finance@nstauthority.co.uk

Information and Samples Plan ('ISP')

If there is a change of Exploration Operator, an Information and Samples Plan must be submitted and agreed with the NSTA before the change.

For further information on ISPs or other obligations under the relevant information and samples regulations, please contact ISC@nstauthority.co.uk

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[23] NSTA Governance Guidance (nstauthority.co.uk)

[24] NSTA's general approach to assessing the 'fitness', Directors and individuals involved in the management of licensees; and of those who control licensees (nstauthority.co.uk)

Other regulators

The NSTA is not the only regulator who has an interest in offshore carbon storage. It will be the Exploration Operator's responsibility to ensure that all necessary licences, leases and approvals are sought from the relevant regulators and other bodies. This includes, but is not limited to, Ofgem, the Health and Safety Executive, The Crown Estate, Crown Estate Scotland, the Department for Energy Security and Net Zero, and the Offshore Petroleum Regulator for Environment and Decommissioning.

Application Process

Exploration Operator applications should be made in writing to the NSTA via the relevant NSTA stewardship focal point by email. The application to the NSTA should make clear who the proposed Exploration Operator is and the underlying rationale, including how the proposed company meets the relevant requirements set out in this annex.

Where an application for a change in Exploration Operator is associated with an application for a CS Licence transfer, these applications can be made at the same time. Prospective applicants are advised to review the NSTA's *Carbon Dioxide Appraisal and Storage Licence Transfer and Change in Control Approach*[25], as this will also be relevant to any NSTA considerations on both applications.

Whilst the application sets out the basic information and underlying rationale behind the change, the NSTA reserves the right to seek further information in order to consider any applications made.

In processing applications, the NSTA routinely consults colleagues within the NSTA, the Department for Energy Security and Net Zero, The Crown Estate/Crown Estate Scotland (where appropriate and applicable) and Ofgem (where appropriate).

The NSTA charges a fee for such applications. Guidance on the NSTA's charging regime for can be found on the NSTA's website at: https://www.nstauthority.co.uk/regulatory-information/regulatory-framework/legislative-context/charging-regime/

If approval is provided to the Exploration Operator application, it will typically be valid for 90 days and conditional on confirmation that the Exploration Operator appointment has taken effect.

If there is a delay in the appointment beyond the approval validity, a further application will be required and the NSTA will consider whether or not to allow further time for the appointment to occur.

Whilst all applications will be considered on a case-by-case basis, the NSTA will generally consider requests for further time to appoint the Exploration Operator on receipt of a revised application which includes rationale as to why the appointment could not be completed within the approval period and confirmation that the details in the original application remain valid.

Approval will not be granted unless the NSTA has all the required information and, among other things, is satisfied that the Exploration Operator is competent of exercising any function of organising or supervising any activity described in the Appraisal/Initial Term.

This annex is not a substitute for any regulation or law and is not legal advice. It does not have binding legal effect. Where the NSTA departs from the guidelines set out in this annex, the NSTA will endeavor to explain this in writing to the person seeking a decision from the NSTA.

Any assessment made by the NSTA in respect of an Exploration Operator, is made specifically and exclusively for the NSTA's own purposes in line with its regulatory role and should not be relied on by any third parties (including other regulators and public bodies) in any manner whatsoever. Any

[25] https://www.nstauthority.co.uk/media/jqcdptsm/cs-licence-transfer-and-change-in-control.pdf

such reliance is at the sole risk of that third party and the NSTA does not accept any responsibility for such reliance.

These guidelines will be kept under review and amended as appropriate in the light of further experience and developing law and practice, and any changes to the NSTA's powers and responsibilities. If the NSTA changes these guidelines in a material way, it will publish revised guidelines.

GUIDANCE DOCUMENT ADDENDUM
NSTA approach to multi-phase/multi-permit carbon storage licence applications

In line with the relevant regulations (including the Storage of Carbon Dioxide (Licensing etc.) Regulations 2010), the NSTA generally expects that each carbon storage licence, underpinned by a suitable work programme, will result in a carbon storage permit for one storage site should the relevant permit application be successful. In cases where a licence covers an area that encompasses multiple prospective storage sites, the NSTA will work closely with the licensee to consider appropriate recourse for supporting multi-phase project development where there is a clear rationale and work programme in support of such developments.

Where a licensee wishes to retain acreage outside of the storage permit site for the purpose of continued appraisal work, they will need to make a formal written request to the NSTA to sub-divide the existing licence prior to any storage permit application, including at a minimum a proposed work programme for the proposed retained acreage. The NSTA will consider any such requests and, if successful, will sub-divide the existing licence to cover the area progressing to permit and the area remaining in the appraisal term, with appropriate terms and duration, and individual work programmes.

North Sea Transition Authority