

ANNEX TO SPIRIT'S WRITTEN REPRESENTATION – PROPOSED PROTECTIVE PROVISIONS

1 Introduction

- 1.1 In proposing the following protective provisions below in relation to the Project, Spirit has drawn on its first-hand experience of operating close to the Walney Offshore Wind Farm as well as the findings of technical reports commissioned by Spirit (Reports 1 and 2) in relation to impacts on shipping and navigation and aviation.
- 1.2 At present, the DCO fails to make adequate provision for co-existence of the Project with Spirit's oil and gas interests.
- 1.3 Accordingly, Spirit requests that the DCO (if granted) be amended to include the requirements outlined below in order to address the following impacts –

2 Shipping and navigation

2.1 Exclusion Zone

- 2.2 An exclusion zone in which no Project infrastructure will be installed within a radius of 2nm or 3.7km from each of:

2.2.1 The Chiswick platform;

2.2.2 The Grove platform;

2.2.3 The proposed Chiswick drilling locations designated C5 and C6 in Figure 2 of Spirit's written representation dated 7 November 2018;

2.2.4 The Grove G5 subsea well-head;

2.2.5 The Kew subsea well-head.

- 2.3 A distance of 2nm or 3.7km is considered appropriate on the following basis -

2.4 This distance would mitigate impacts in relation to helicopter approaches and missed approaches whilst flying on instruments.

2.5 This distance would also allow an anchor spread vessel (i.e. a vessel such as a drilling rig or crane barge that requires a star-shaped set of anchor moorings to remain on station) to approach and operate over Spirit's key infrastructure.

2.6 This distance is also generally consistent with guidance produced by the World Association for Waterborne Transport Infrastructure¹, which recommends that no turbines are constructed within 2nm or 3.7km of a shipping channel, to provide adequate sea room for safe vessel operations.

2.7 REWS

2.8 The current ARPA and AIS warning systems on the J6-A platform will require to be upgraded to a predictive radar early warning system (REWS) in consequence of the Project. In order to increase the effectiveness and accuracy of such a REWS it is likely that it will be installed on more than one platform allowing triangulation to more accurately determine the position and speed of approach of vessels.

2.9 Further work is, however, required to verify the effectiveness of a predictive REWS in such close proximity to turbines of the size and density proposed.

2.10 Accordingly, commencement of development in relation to the Project should be conditional on the provision of evidence to demonstrate that a predictive REWS (or equivalent mitigation) will operate effectively. Thereafter, the approved REWS should be implemented and maintained for the lifetime of the Project.

2.11 A predictive REWS is considered appropriate on the following basis –

2.12 The presence of the Project will likely bring a concentration of third party vessels that pass to the east of the Project into close proximity with Spirit's assets.

2.13 As third party vessels become familiar with much of the Southern North Sea being populated by wind farms, vessels will likely elect to pass through the array area posing a danger to Spirit assets on exit (if travelling eastwards) from the Project area.

2.14 A predictive REWS uses software algorithms to identify and warn of potential approaching traffic. The ARPA and AIS systems are appropriate where traffic is light and can be monitored manually but the anticipated increase in vessel activity in the vicinity of Spirit's Greater Markham Area operations calls for automated monitoring.

3 Aviation

3.1 An exclusion zone in which no wind turbines will be installed unless otherwise agreed with Spirit. The exclusion shall extend to a radius of 7.5nm or 13.9km from each of:

3.1.1 The Chiswick platform;

3.1.2 The Grove platform;

3.1.3 The J6-A platform;

¹ Interaction Between Offshore Wind Farms and Maritime Navigation, The World Association for Waterborne Transport Infrastructure (2018).

- 3.1.4 The proposed Chiswick drilling locations designated C5 and C6 in Figure 2 in Spirit's written representation dated 7 November 2018;
 - 3.1.5 The Grove G5 subsea well-head;
 - 3.1.6 The Kew subsea well-head.
- 3.2 A distance of 7.5nm or 13.9km is considered appropriate on the following basis –
- 3.3 7.5nm is the distance identified by Spirit's aviation expert as being the start of an airborne radar approach (ARA) from a minimum safe altitude (MSA) of 2100 feet (based on an assumed turbine height of 325m) under instrumentation flight rules (IFR) and is consistent with the Applicant's determination of 8nm for the start of an ARA under IFR as used in the Applicant's Environmental Statement. An ARA is always executed into the wind and as it is not possible to descend below the minimum safe altitude (MSA) whilst over the wind farm, there can be no turbines along a 2nm wide corridor downwind of the destination. Flights to Spirit's Greater Markham Area assets operate 24/7/365 and so need to be operable irrespective of wind direction. If the Applicant were granted the ability to install turbines 1.5nm east of Spirit's facilities, ARAs would not be possible when the wind direction is in any direction with a 160° arc.
- 3.4 Whilst Spirit may, after further analysis of meteorological data and statistics, be willing to consider accepting some limitations to flight operability, such a large arc of no fly conditions would be quite impracticable for Spirit. The exclusion zone required by Spirit to ensure safe operation of their assets will be no less than a radius of 5nm or 9.25km from each of:
- 3.4.1 The Chiswick platform;
 - 3.4.2 The Grove platform;
 - 3.4.3 The J6-A platform;
 - 3.4.4 The proposed Chiswick drilling locations designated C5 and C6 in Figure 2 in Spirit's written representation dated 7 November 2018;
 - 3.4.5 The Grove G5 subsea well-head;
 - 3.4.6 The Kew subsea well-head.
- 3.5 A distance of 5nm or 9.25km is required as a minimum because -
- 3.6 Should a landing be aborted at the missed approach point (MAP), an aircraft will need to turn between 30° and 45° and climb to the minimum safe altitude (MAS). Such an operation must be able to be accomplished even in the event of one engine being inoperable (OEI). To reach MSA (based on an assumed turbine height of 325m) requires 5nm or 9.25km. Likewise should an engine fail shortly after take-off the same distance would be required in order to reach MSA. As the prevailing winds are generally from a westerly direction and thus missed approaches or single

engine ascents might be most commonly required towards the Project, there can be no compromise in this exclusion radius.

4 Licences and Safety Cases

4.1 Obligations requiring the Applicant to:

4.1.1 Consult with the relevant Spirit entity as licensee(s) of any relevant licences prior to undertaking any potentially conflicting offshore activities within any areas where the development site and Spirit's licence areas overlap plus a further buffer of 2nm where the development site extends beyond and adjacent to any of Spirit's licence areas (for example, to prevent any HSE conflict between the parties' activities).

4.1.2 Identify and implement any safety and/or mitigation measures that may be required as part of the offshore works to allow for the updating of Spirit's safety cases and meet the requirements of the Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015.

4.1.3 Progress the Project in a manner which does not prejudice the ability of the licensee(s) to exercise any rights they may have under such licences (such may include, for example, a requirement for the Applicant to obtain the licensees' consent prior to constructing potentially conflicting wind farm infrastructure).

4.2 We propose that the protective provision should automatically fall away if the parties are able to come to a commercial agreement covering the above matters.

4.3 There is support for including such a protective provision if the Application is granted given the inclusion of comparable provisions in the DCOs for both in respect of the Hornsea Two Offshore Wind Farm (EN010053) and East Anglia Three Offshore Wind Farm (EN010056).

4.4 Furthermore to the extent that the proximity of the Project infrastructure and operations alter the risk profile of Spirit's own operations, revision of the relevant safety case is likely to be required. Where any material changes are required to a safety case, these changes must be submitted to the competent authority for approval in terms of the relevant legislation.

5 Protective Provisions – Drafting

5.1 Exclusion Zone - Shipping

"Project Infrastructure" means any temporary or permanent installation (including but not limited to wind generator turbines, wind generator turbine foundations, supporting wind generator turbine infrastructure, buoys, anchor chains, pipes and cables) extending 10m or more from the seabed.

"Spirit Energy" means the relevant Spirit Energy entity as owner or operator of the Affected Asset(s): one or each of (as applicable) Spirit Energy North Sea Limited (UK Company Number: 04594558), Spirit Energy

Resources Limited (UK Company Number: 02855151) or Spirit Energy Nederland B.V. (Company Number: 34081068) and any future successors and/ or assignees.

At any time during the lifetime of the Project, no Project Infrastructure will be installed within a radius of 2nm or 3.7km from each of:

- The Chiswick platform;
- The Grove platform;
- The proposed Chiswick drilling locations designated C5 and C6 in Figure 2 of Spirit Energy's written representation dated 7 November 2018;
- The Grove G5 subsea well-head;
- The Kew subsea well-head (together "the Affected Assets").

Unless otherwise agreed in writing between the Operator [Orsted and successors] and Spirit Energy.

5.2 Exclusion Zone - Aviation

"Spirit Energy" means the relevant Spirit Energy entity as owner or operator of the Affected Asset(s): one or each of (as applicable) Spirit Energy North Sea Limited (UK Company Number: 04594558), Spirit Energy Resources Limited (UK Company Number: 02855151) or Spirit Energy Nederland B.V. (Company Number: 34081068) and any future successors and/or assignees.

At any time during the lifetime of the Project, no wind turbine generator forming part of the Project will be installed within a radius of 7.5nm or 13.9km² from each of:

- The Chiswick platform;
- The Grove platform;
- The J6-A platform;
- The proposed Chiswick drilling locations designated C5 and C6 in Figure 2 of Spirit Energy's written representation dated 6 November 2018];
- The Grove G5 subsea well-head;
- The Kew subsea well-head (together "the Affected Assets").

Unless otherwise agreed in writing between the Operator [Orsted and successors] and Spirit Energy.

5.3 REWS – Navigational safety

(1) No construction of any wind turbine generator forming part of the Project shall commence until the Secretary of State having consulted with Spirit Energy is satisfied that appropriate mitigation will be implemented prior to any wind turbine generator becoming operational and maintained for the life of the Project.

(2) For the purposes of this requirement—

"appropriate mitigation" means measures comprising a predictive Radar Early Warning System to mitigate any adverse impacts on and ensure the safe operation of Spirit Energy's assets - J6-A, Chiswick and Grove- ("the Affected Assets") for the life of the Project;

"Radar Early Warning System" means the radar early warning system used to monitor and track the positions of vessels proximate to the Affected Assets. It comprises primarily of radars fitted on a number of

² As per the discussion of Spirit's justification for an aviation exclusion zone, subject to further analysis of meteorological data and statistics, Spirit may be willing to consider accepting a reduced exclusion zone; however, in any case Spirit will require this to be no less than a radius of 5nm or 9.25km to ensure safe operation of their assets.

Spirit Energy's offshore platforms along with associated software providing a multi-site, multi-sensor integrated marine surveillance system with a predictive early warning capability;

"Spirit Energy" means the relevant Spirit Energy entity as owner or operator of the Affected Asset(s): one or each of (as applicable) Spirit Energy North Sea Limited (UK Company Number: 04594558), Spirit Energy Resources Limited (UK Company Number: 02855151) or Spirit Energy Nederland B.V. (Company Number: 34081068) and any future successors and/or assignees.

(3) The Operator [Orsted and successors] shall thereafter comply with all obligations contained within the appropriate mitigation for the life of the Project.

5.4 Coordination and safe operation of licence activities

(1) The following provisions shall have effect for the protection of Spirit Energy unless otherwise agreed in writing between the Operator and Spirit Energy.

(2) In this Part—

"Protected Area(s)" means any area where there is an overlap between the development site for the Project and Spirit's licence area(s) and where the development site extends beyond and adjacent to Spirit's licence area, a further buffer of 2nm will be included beyond the relevant Spirit licence area(s);

"Safety Case" means a safety case as defined by the Offshore Installations (Offshore Safety Directive) (Safety Case etc.) Regulations 2015 (as amended or replaced);

"Spirit Energy" means the relevant Spirit Energy entity as licence holder of an exploration licence within the Protected Area(s): one or each of (as applicable) Spirit Energy North Sea Limited (UK Company Number: 04594558), Spirit Energy Resources Limited (UK Company Number: 02855151) or Spirit Energy Nederland B.V. (Company Number: 34081068) and any successors and/or assignees as future licence holders.

(3) Before commencing each of (i) construction of any part of the Project; (ii) operation of the Project and (iii) decommissioning of the Project within the Protected Area(s), the Operator must submit to Spirit Energy plans and sections of the proposed works and such further particulars as Spirit Energy may, within 28 days from the day on which plans and sections are submitted under this paragraph, reasonably require.

(4) As part of the process described in paragraph (3), Spirit Energy shall consider whether the relevant works and/or operations proposed by the Operator at each of the stages (i), (ii) and (iii) may give cause for any Safety Case relating to the Protected Area to be updated. In such circumstances, the Operator will co-operate with Spirit Energy to identify and implement safety and/or mitigation measures that may be required (on account of the Operator's proposed works and/or operations) to update Spirit Energy's Safety Case(s) to the satisfaction of the competent authority.

(4) No works comprising any part of the Project, the operation of the Project or decommissioning of the Project (as relevant) within the Protected Area(s) may be commenced until plans and sections in respect of the works submitted under paragraph 3 have been approved by Spirit Energy. For the avoidance of doubt, Spirit Energy shall not be required to provide any approval to the Operator as described in this Part X while the process of updating and/or review by the competent authority of Spirit Energy's Safety Case(s) is ongoing.

(5) Any approval of Spirit Energy required under paragraph 4 must not be unreasonably withheld or delayed but may be given subject to such reasonable conditions (in addition to any safety or mitigation measures relating to any Safety Case(s)) as Spirit Energy may require to be made for the continuing safety and operational viability of Spirit Energy's operations in the relevant Protected Area(s).

(6) (i) Subject to sub-paragraphs (ii) if, by reason or in consequence of the construction of any of the works, operation or decommissioning of the Project referred to in paragraph 3, any damage is caused

to any apparatus or property owned, rented, leased or otherwise by Spirit Energy, the Operator must indemnify Spirit Energy in relation to any such damage.

(ii) Nothing in sub-paragraph (i) imposes any liability on the Operator with respect to any damage to the extent that it is attributable to the act, neglect or default of Spirit Energy its officers, servants, contractors or agents.

(7) Any dispute arising between the Operator and Spirit Energy under this Part shall be determined by arbitration unless otherwise agreed in writing by the Parties.