

## Sheringham and Dudgeon (Windfarm) Extension Projects

### Perenco UK Limited Response to Examiner Deadline 1



## 1.0 Introduction

Perenco UK Limited (PUK) is the Operator of the Waveney and Durango fields in the Southern North Sea (SNS). The Waveney field is a producing gas field which comprises 2 wells drilled from the Waveney Normally Unattended Installation (NUI). Gas from the Waveney field is exported through the Lancelot Area Pipeline System (LAPS), to the Perenco Bacton Terminal on the North Norfolk Coastline.

The Durango field has ceased production, however, the Durango subsea well and pipeline to the Waveney NUI remain in place, awaiting decommissioning which is likely to be undertaken in conjunction with decommissioning and dismantling of the Waveney NUI some time after cessation of production from the Waveney wells.

### 1.1 Waveney NUI and Durango Well Proximity to Proposed Windfarm

The Waveney NUI is located 500m from the northern edge of the proposed northern Dudgeon Extension Project (DEP North), whilst the Durango subsea wellhead is located to the southwest of the proposed DEP North development. The pipeline from the Durango subsea well to the Waveney NUI passes through the proposed windfarm array (Figure 1).

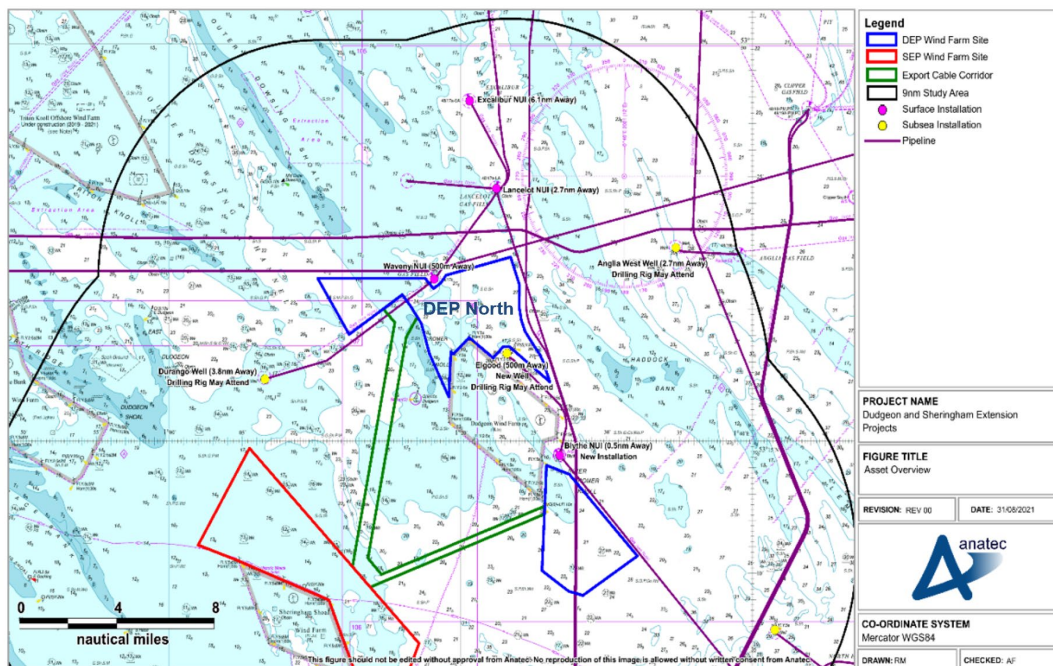


Figure 1: Location of Waveney and Durango relative to DEP North

### 1.2 Helicopter and vessel support to Waveney and Durango Operations

During normal operations, the Waveney NUI is accessed by helicopter on a weekly basis. The Waveney NUI helideck is restricted to being used in daylight hours only, however, helicopter operations are currently conducted in a variety of weather conditions, making use of instruments as required.

For decommissioning, (currently expected to occur after 2030 and thus during the operation of the proposed DEP North windfarm), a non-production installation (NPI) will need to be located over both the Waveney NUI and Durango subsea well to plug and abandon the wells in accordance with UK regulatory requirements. During

this period, which could be expected to be 3 – 6 months, helicopter flights will be required to/from the NPI twice daily. These flights normally only occur between 06:00 and 22:00 (in a variety of weather conditions, making use of instruments as required) and are not restricted to daylight hours.

For dismantling, which will be scheduled at some point after decommissioning (thus during the operation of the proposed DEP North windfarm), a Heavy Lift Vessel (HLV) and supporting barges or an NPI will require access to both the Waveney NUI and Durango subsea well. Dismantling activities could be expected to be 2 to 4 weeks at each location. During this period helicopter flights may be required to/from the HLV/NPI daily. These flights normally only occur between 06:00 and 22:00 (in a variety of weather conditions, making use of instruments as required) and are not restricted to daylight hours.

### **1.3 Telecommunications**

Many offshore installations, including the Waveney NUI rely upon line of sight telecommunications. PUK has reviewed whether the proposed DEP North development would be likely to affect the line of sight link to the Waveney NUI and has concluded that there should be no adverse effect.

### **1.4 Effect of Proposed Windfarm on the Waveney NUI and Durango Well**

Should the proposed DEP North windfarm be approved, the main impact on PUK operations would be:

- As currently proposed by the Applicant, an inability to fly to the Waveney NUI except in very rare circumstances (when wind is from the east or the west)
- Should this first major impact be resolved (e.g. by there being more unobstructed airspace around the Waveney NUI), there would nevertheless be a reduction in the times when flights would be permitted due to Helicopter Operators' flying restrictions based on the proximity of the Waveney NUI's helideck to the wind turbines and their rotors.
- Due to limited space between the wind turbines and the Waveney NUI, manoeuvring of an NPI and/or HLV and associated barges required for decommissioning and dismantling of the Waveney NUI and the Durango subsea well is likely to be much more complex and may only be possible in reduced weather windows. The financial impact of this could be significant.

These impacts will be explained and examined further in section 2.0.

### **1.5 Co-existence and Cooperation**

PUK is committed to successfully co-existing, and cooperating, with other users of the sea. Constructive discussions are in progress between PUK and the Applicant and it is hoped that agreement can be reached that will enable both parties to be able to conduct their respective operations in parallel. It must however be stressed that, as currently proposed, the DEP North windfarm development would make it impossible to continue production from the Waveney field and would prevent the decommissioning of the Waveney NUI and Durango subsea well. PUK would thus be prevented from fulfilling its statutory obligations under the production licences already awarded to it.



## 2.0 Assessment of Impact

The Applicant commissioned Anatec Ltd (Anatec) to undertake work on its behalf and this is summarised in the Helicopter Access Study (APP-205). With respect to Waveney, Anatec concluded that:

- The space required for flying on instruments (instrument meteorological conditions or IMC), would be “at least 2.5nm clear of obstacles for take-off (9nm for an approach), so IMC access is not considered further”.
- “If wind turbines were built up to the boundary, within 500m of the platform, then CAT [Civil Aviation Transport] helicopters would be unable to access the platform for 85.4% of daylight conditions.”
- “If an obstacle free radius of circa 1nm could be provided, then approaches and take-off under Day VMC [Visual Meteorological Conditions] conditions could be conducted safely. That would increase the daylight access from approximately 14.6% to 92.3% (2020) of day conditions.”

In reaching these conclusions, Anatec have made some assumptions that PUK does not consider to be valid. These are:

- Flights can be conducted when all Civil Aviation Authority (CAA) minimum conditions are met.
  - In fact Helicopter Operators impose more onerous requirements than these minimum conditions. For example, where turbines are within 3nm of a helideck, Helicopter Operators only permit flights in daylight and operating visually. The cloudbase and visibility criteria for such operations are more onerous than the CAA’s minimum requirements for flying under VMC. So, although it may legally be possible to fly, no Helicopter Operator would provide a service under some of the conditions assumed acceptable by Anatec. As a result, the impact of the windfarm is greater than presented by Anatec.
  - PUK has been advised that all North Sea Helicopter Operators are currently in discussions with the CAA and are developing a set of consistent standards for flying ‘in proximity to’ and ‘within’ windfarms. This is likely to lead to a revision of *CAP764 Policy and Guidelines on Wind Turbines* and the CAA’s *Specific Approval for Helicopter Offshore Operations* (SPA.HOFA). PUK has based its own analysis on matters it understands have already been agreed in this process but believes that the Examiners should ideally seek to ascertain the CAA’s and Helicopter Operator’s positions before reaching a conclusion in this Development Consent Order (DCO) examination.
- The space requirements for instrument operations preclude their further consideration.
  - Whilst PUK agree that an instrumented approach (Airborne radar approach (ARA)) would require about 9nm free from obstacles, Anatec have not considered that an instrument meteorological conditions (IMC) en-route descent could be executed to the north of the Waveney NUI (away from the windfarm) followed by a low altitude approach under visual meteorological conditions (VMC) to the vicinity of the Waveney NUI. In this case, the obstacle-free radius would be defined by the greater of:





- the distance needed for a take-off with one engine inoperable; and
- the minimum separation (3nm) from wind turbines stipulated by Helicopter Operators in order to permit instrument operations.

PUK believe that an obstacle-free radius of at least 3nm would permit instrument flying to and from the Waveney NUI and thus significantly reduce the impact of the windfarm on the helicopter flights required to enable operations at the Waveney NUI, especially during decommissioning and dismantling.

- Under daylight conditions, a turn into a 0.5nm stabilised Final Approach Track can be accomplished within a total radius of 1nm around the Waveney NUI.
  - Under daylight visible conditions, aircraft are required at all times to maintain a distance of at least 500' laterally from all obstacles. The wind turbine rotors proposed for DEP North may have a diameter of up to 300m (APP-090, pg74). PUK's Helicopter Operator does not consider 1nm to be sufficient to make a turn and then establish a 0.5nm stabilised Final Approach Track whilst maintaining separation from the wind turbines and rotors. A minimum of 1.5nm around the Waveney NUI would be required for such daylight operations.

Notwithstanding the above differences, Anatec's analysis clearly shows that, unless sufficient obstacle-free space is provided around the Waveney NUI, helicopter operations would be so restricted as to make production, decommissioning and dismantling activity impossible. PUK considers that the minimum obstacle-free space that would permit some helicopter operations would be 1.5nm as opposed to the 1nm proposed by the Applicant. Flying in this minimum space scenario would however be severely restricted relative to current operations (particularly to a rig, where currently flights are not restricted to daylight hours). Anatec's analysis significantly under-states this reduction as it only considers that flying would be limited to daylight. Anatec did not consider that flights would also be limited to times when the Helicopter Operators' visibility and cloud base requirements are met (these are more stringent than current CAA minima for VMC operations). PUK believe that an obstacle-free radius of 3nm (which would allow operations based on the normal CAA minima, including instrument operations) is required to ensure that the restrictions to flying do not have too adverse an impact on Waveney NUI operations.

Whilst the Applicant is not expected to determine the placement of wind turbine generators until after approval of the DCO, recognising that wind turbine generators will have a minimum separation of 1.05km (cf APP-090, pg 74), it may be possible to accommodate one wind turbine generator within the 3nm radius PUK believes is necessary. Such an approach would mitigate the impact on the Applicant of facilitating coexistence with PUK.

The Applicant commissioned Anatec to conduct a Vessel Access Study (APP-204). PUK believes that, if its proposals concerning space for helicopter operations are adopted, there would be no material restrictions to vessel operations around the Waveney NUI as long as no temporary or permanent surface infrastructure is placed within the 3nm (or even the 1.5nm) radius of the Waveney NUI. Space would also be required for marine operations along the pipeline between Durango and Waveney. A 1km wide corridor free from surface obstructions along the pipeline (500m either side) would suffice for this purpose.

### 3.0 Conclusions

The DEP North as proposed would preclude production of gas from the Waveney field and prevent the Waveney NUI from being decommissioned and dismantled. PUK would thus be prevented from fulfilling its statutory obligations under the production licences already awarded to it.

Modifications to the proposals for DEP North would permit Waveney NUI operations and subsequent decommissioning and dismantling activities to co-exist with windfarm operations. Discussions are in progress between the Applicant and PUK to seek to find mutually acceptable arrangements to allow co-existence. Should agreement not be reached, PUK will require Protective Provisions to be imposed on the Applicant that provide for:

- obstacle-free airspace of at least 3nm around the Waveney platform
- a corridor of at least 1km width along the route of the Durango to Waveney pipeline which is clear of temporary and permanent surface obstacles.

The CAA is currently in discussions with helicopter operators with the intention of updating the policy and guidance relating to flights in proximity to and within a windfarm. Any decision regarding the DEP North DCO should be made in the light of such updated policy and guidance from the CAA.