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24 October 2008

**Re: Corrib Onshore Pipeline - Review of Supplementary Report.**

Dear Orla

Please find set out below the findings from our review of the Corrib onshore pipeline Supplementary EIS Report and accompanying appendices (RPS, September 2008). The Supplementary Report presents the results of additional work carried out on certain items of the original EIS in response to requests for additional information made by the DCENR and An Bord Pleanála.

We consider that the Supplementary Report adequately addresses many of the factors in the original EIS highlighted as deficient in the request for further information. To maintain a concise format, we only comment on items considered to require further assessment, clarification or action.

1) Construction of pipeline through bog using the 'Stone Road' method

Laying of the pipeline through areas of bog is proposed to be carried out using the Stone Road method. In brief, this consists of excavating a trench through the peat to a depth of  $\leq$  0.5m above 'firm ground' (i.e. at least 0.5m of intact peat will be left below the bottom of the trench). The trench will then be partially filled with stone, and the 0.5m diameter pipeline laid within the stone. A layer of excavated peat (at least 1.2m thick) will then be spread over the stone. Therefore, the original thickness of peat must be in excess of approximately 2m to allow the pipe to be laid according to this methodology.

Peat or clay plugs would be placed in the trench at intervals to reduce the lateral flow of water within the Stone Road. The retention of a 0.5m thickness of undisturbed peat at the base of the trench, and the non-disturbance of the underlying geology, would also reduce the risk of water leaking vertically.

Concerns were expressed following review of the original EIS that there had been no site-specific ground investigations along a 2.6km length of the proposed pipeline through the peat bog of Rossport commonage. Without this information, it could not be confidently

assessed whether there was a sufficient thickness of peat for the Stone Road technique to be employed. Furthermore, a lack of site-specific information of the geology beneath the peat hindered an assessment of potential effects upon the bog's hydrogeology / hydrology.

In response to the requests for additional information, the depth of peat through RosSPORT Commonage was established using 42 'peat probes', located at approximately 100m intervals along the route of the proposed pipeline. These probes only proved the depth to the base of the peat, and provided no information on the type of geology beneath the peat.

The findings revealed that the peat was greater than 2m thick along the majority of the route through the Commonage. However, significant sections were identified<sup>1</sup> with a peat depth of  $\leq 2m$ . In total, these account for approximately 30% of the RosSPORT Commonage pipeline route. Therefore, it seems likely that an appreciable length of the pipeline through the RosSPORT Commonage will not be able to be laid using the 'Stone Road' method as described.

Alternative methods of construction are described in the EIS, but in the absence of an adequate thickness of peat it appears that the base of the trench would need to extend into the underlying geology. If the underlying geology were to consist of highly permeable material (such as sands / gravels), and if the surface of groundwater in these materials was beneath the base of the trench, then vertical leakage of water would occur from the trench to the water table beneath the peat. Any vertical leakage could have the potential to induce dewatering of the peat, with subsequent negative impacts.

The recent ground investigations gathered no information on the properties of the geology beneath the peat, and so it is not known whether these geological materials are highly permeable. There is also no site-specific information on the level of groundwater in these geological materials. However, it is noted in the EIS and the Supplementary Report that much of the route of the pipeline through the Commonage might lie on a surface water / groundwater divide. This suggests that a downward vertical hydraulic gradient might prevail, but this cannot be confirmed with the available information.

In light of the above, it cannot be properly assessed whether the proposed method of laying the pipe presents an unacceptable risk of peat dewatering due to leakage of water through the base of the trench. An adequate assessment of the potential for such impacts would require site-specific information on:

- The hydrogeological properties of the geological material beneath the peat, including *inter alia* estimates of hydraulic conductivity (permeability), type of groundwater flow (i.e. fissure or intergranular flow) and estimates of aquifer / aquitard thickness<sup>2</sup>.
- Preliminary site specific measurements of the groundwater level in the geological material beneath the peat, with an interpretation of whether confined or unconfined conditions prevail<sup>3</sup>.

The geographical extent of site-specific investigations need not necessarily encompass the entire length of the proposed pipeline through RosSPORT Commonage. However, particular

<sup>1</sup> Peat  $< 2m$  thick between approximate chainages: 86 100 to 86 150 (50m length), 86 800 to 86 950 (150m), 87 400 to 87 800 (400m), and: 88 280 to 88 520 (240m).

<sup>2</sup> Physically proving the depth to the base of a very thick geological layer would not be practical, but sufficient penetration should be achieved to provide confidence that the geology has been proven to an adequate depth.

<sup>3</sup> It is recognised that it might not be pragmatic to install permanent groundwater monitoring facilities at present. Groundwater level measurements taken while drilling might suffice for the purposes of this assessment, providing that drilling is suspended for a suitable period to allow a representative water level to be recorded.

emphasis should be placed on those parts of the route where the thickness of peat is likely to be  $\leq 2\text{m}$ .

Using the findings of the above, an assessment should be provided of the potential for vertical downward leakage of water from the base of a trench, and the potential impacts that could result from such leakage in the absence of any mitigating measures. Details should then be provided of any mitigation measures that would alleviate any risks to acceptable levels (such as an alternative method of pipe installation to be used in susceptible sections of the route). The effect of any proposed mitigating measures on other aspects of the scheme (such as geotechnical slope stability) should also be considered.

#### 2) Identification of breeding holts

There are concerns that some sections of the pipeline may be surveyed some time before construction and breeding may then start at apparently inactive or non-breeding holts in the intervening period. The information in the Supplementary Report does not indicate how likely this is, or whether there is a procedure for spotting and responding to breeding activity if it commences after the pre-construction survey has taken place.

We recommend that the timing of holt surveys should be discussed and agreed between appropriate specialists representing the applicant and DEHLG. We further recommend that the outcome of this agreement is reflected in a consent condition that stipulates the timing of holt surveys prior to construction.

#### 3) Ornithological aspects

The two post-breeding surveys carried out in 2007 (EACS) may not have been as well-timed or as comprehensive as previous surveys, so we did not necessarily support statements in the original EIS that the abundance and diversity of birds in the affected area is low. However, the information provided in the Supplementary Report allows a better understanding of this issue, and the proposed mitigation measures appear to be largely satisfactory. Nonetheless, in addition to the consent conditions recommended in our summary table (dated 13 August 2008), we recommend that the following conditions<sup>4</sup> should also be considered for inclusion in the EMP:

- Post-construction habitat creation to include Corncrake habitat
- Pre-construction habitat clearance to take place August to February to avoid disturbance to breeding birds
- Sand Martin burrows closest to the landfall to be netted before the start of the breeding season
- Sand Martin colony to be clearly demarcated and access to staff and machinery restricted
- Works in close proximity to the Brent Goose feeding area at Glengad to be avoided during the late winter / early spring (mid-February to late April).

#### 4) Peat Management

The Supplemental EIS Report provides further information on peat management. Following review of this additional information we make the following recommendations:

<sup>4</sup> Some consent conditions have already been recommended in our Draft Findings Summary (August 2008), and these remain in addition to the conditions suggested above.

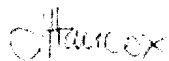
- **Storage of turves.** The Supplemental EIS Report states that turves will be stored in single layers on timber mats adjacent to the pipeline trench before replacement over the pipeline during reinstatement. We find that the use of single layer storage is appropriate in helping to reduce compaction damage of both the turves and the underlying peat on which the turves are stored. However, in addition to these controls we also recommend that:
  - SEPIL provide an estimate of the total time for which turves will be stored prior to replacement, demonstrate how this time period is to be minimised, and demonstrate that storage over this time period will not result in degradation of the peat. This information is required before the likely impact on the peat land can be determined and hence should be provided prior to consent being granted.
  - SEPIL inspects the condition of both the turves and the underlying peat to monitor for damage during the storage period. Where any damage is identified amendments to the storage method/location should be implemented as necessary. We suggest that this requirement forms a consent condition.
  - In addition to timber mats the stored turves should underlain with geotextile. We suggest that this requirement forms a consent condition.
- **Stringing areas.** It is unclear from the Supplemental EIS Report where temporary stringing areas are to be located. We recommend that SEPIL confirms whether any of the stringing areas are located within the designated blanket bog or non-designated intact blank bog areas and, if so, what special mitigation measures will be employed. This should be clarified prior to consent being granted.
- **Sites need to be identified for the disposal of waste peat.** We recommend that
  - If an existing peat disposal site is to be used then all permits for the use of this site must be in place prior to the commencement of construction (this would form a consent condition).
  - If a new dedicated disposal site is to be used then an impact assessment of such a disposal site should be developed as part of the Corrib pipeline planning submission.

5) River Crossings

The Supplemental EIS Report indicates that river crossings may be undertaken using a dam-and-flume construction method, whereby the watercourse is routed through a flume pipeline during in-channel trenching and pipeline laying. AEA agrees that this is an appropriate construction method and recommend that a condition consent is provided that stipulates that the dam-and-flume method is implemented and this the river crossings are undertaken during periods of low flow.

For the crossing of the R. Leenamore, which may potentially be inhabited by trout, we further recommend that a consent condition is included to require SEPIL to undertake pre-construction surveys for the presence of salmonids and, if identified during migration/spawning seasons, that construction in the watercourse be delayed

Yours sincerely



Jon Hancox  
Principal Consultant