Memo

Nottinghamshire County Council

From: Nick Crouch, Senior Practitioner Nature Conservation, Conservation Team

To: Oliver Meek, Development Management, Planning Team

Date: 26 May 2016

Re: To develop a hydrocarbon wellsite and drill up to two exploratory hydrocarbon wells (one vertically and one horizontally) by use of a drilling rig together with associated ancillary works. The proposed development will be carried out in four phases: Phase 1 – Wellsite construction; Phase 2 – Drilling of up to two exploratory wells for hydrocarbons including potential shale gas (the first one vertical and the second one horizontal); Phase 3 – Suspension of wells and assessment of drilling results; Phase 4 – Site decommissioning, well abandonment and restoration. Land off Springs Road, Misson (ES/3379). Regulation 22 response.

Additional information has now been provided by the applicant as part of their Regulation 22 response, including in relation to ecology (Technical Note C and related appendices). I provide the following comments which should be read in conjunction with my previous comments (dated 5 November 2015). It should be noted that I met with the applicant's agent and ecologist on 17 March 2016 to discuss their approach to addressing these issues.

1. Indirect impacts on birds

I previously highlighted that no breeding bird surveys had been carried out in adjacent areas of the Misson Training Area SSSI, despite this site lying only 130m from the application site and the assemblage of breeding birds (using scrub) being one of the features for which the SSSI is notified. In my scoping response, I indicated that breeding bird surveys would be required "*within the zone of influence around the wellsite, due to the proximity of this site to Misson Training Area SSSI*". I was therefore concerned that breeding bird surveys had not been carried out in the SSSI and sought justification for this. I also noted that the desktop study had failed to identify a notable bird species (long-eared owl), known to breed within the SSSI and specifically mentioned on the SSSI citation document.

I also highlighted that whilst a Noise Assessment of the proposals had been carried out, this was done in the context of human receptors, and potential noise impacts on ecological receptors were given very cursory attention in the Ecology Chapter of the ES. This was despite the fact that the noise contour plans contained within Appendix B of the Noise Assessment indicated that there would be elevated noise levels in the Misson Training Area SSSI during drilling. Given that the SSSI is, in part, designated for its breeding birds, which have the potential to be impacted by noise (for example through a masking of their territorial songs/calls), I stated that it was necessary for this issue to be given further consideration (noting that this issue was specifically highlighted in my scoping response, where I stated "*that given the proximity of this site to Misson Training Area SSSI, and the lack of any significant attenuation features between the site and the SSSI, a thorough assessment of noise impacts on breeding birds (and any other sensitive wildlife) should be carried out*"). I indicated that such an assessment should cover:

- A review of noise impacts on birds
- A consideration of noise impacts during construction, operation and decommissioning
- Mitigation measures

At the meeting on 17 March referred to above I reiterated the need for a Breeding Bird Survey covering those parts of the SSSI potentially affected by noise. It was stated that monitoring of bird populations would commence, to include three visits in the breeding season and nocturnal visits for long-eared owl. I advised that it would be advantageous to submit the results of these surveys as part of the Regulation 22 submission, but it was stated that this was unlikely to fit with the applicant's timelines.

Existing data relating to the bird interest of the SSSI has been sought by the applicant from the site managers, Nottinghamshire Wildlife Trust, and this is provided (Appendix B of Technical Note C). Of particular note is the fact that two pairs of long-eared owl bred in 2015 (stated by the supplier of the data as being '*very sensitive*'), and that '*it is understood that the north-west corner of the site has historically been the most important area for these birds and there are currently (Spring 2016) two pairs calling in this area*', i.e. that part closest to the application site. Other notable birds breeding on the site (i.e. those which are not generally widespread) are barn owl, lesser spotted woodpecker, wheatear, corn bunting, turtle dove and woodcock. Technical Note C considers that long-eared owl is the most sensitive species at the site, by virtue of its listing on the SSSI citation; tree pipit and grasshopper warbler are also listed on the citation, but apparently the former has not been recorded since 2010 and the latter has not been recorded since 2002.

It is indicated that further bird surveys are currently being completed within the SSSI, in order to ascertain a baseline against which future monitoring can be assessed should development be permitted. Given that we are now at the end of May, and presumably only one further survey visit is planned (in June), **I would request that the results of these surveys are made available, prior to the determination of the application**, so that all information is available to assist with considering the potential impacts of the proposals – particularly the more precise location of long-eared owl territories and how these relate to the altered noise environment (see below), as well as the spatial distribution of the other notable species listed above.

Notwithstanding the results of these surveys, Technical Note C gives consideration to the potential effect of noise on birds, including a literature review, which is welcomed. This is in relation to (i) construction noise (i.e. sudden noises of high amplitude) and (ii) operational noise (i.e. continuous background noise):

(i) It is concluded that in relation to sudden noises, a threshold figure of 70-80 dB L_{AFmax} should be applied, below which an effect on long-eared owls is considered '*reasonably unlikely*' to occur. However, it is apparent that many of the studies detailed in the submission relate to species associated with water, i.e. wildfowl, waders and gulls/terns, normally in an estuarine context, and none relate to owls. I am therefore concerned that the studies are not entirely analogous and that a level of 70-80 dB L_{AFmax} may not be appropriate. Whilst I acknowledge that there is are no studies which directly relate to the case in hand, this underlines the importance of taking a precautionary approach for what has been described as a 'very sensitive' species.

(ii) In relation to continuous noise, a threshold of 50 dB L_{Aeq} is suggested, below which a significant impact on nesting birds is considered to be '*insignificant*'. Again, there are

no studies which are directly analogous to the one under consideration. Consideration is also given to the hearing sensitivity of owls in relation to the frequency of noise sources; the information presented is technical in nature, and I am unable to verify the assertions made therein. However, the submission gives weight to US Fish and Wildlife Service guidance that relates to the northern spotted owl. This guidance indicates that disturbance may occur when project-generated sound exceeds ambient conditions by 20-25 dBA (although the upper figure of 25 dBA is quoted in Technical Note C).

The modelled noise contours (contained in the ES but replicated in Appendix C of technical Note C) show that operation of the site would give rise to noise within the range of range of 40 to 50 dB L_{Aeq} covering an area of up to 9.55ha (c.8%) of the SSSI. However, it is stated that because this would not exceed current ambient noise levels by 25dB, this increase in noise is '*considered most likely to be tolerated by birds*' (presumably owls).

However, it must be noted that ambient noise levels around the application site have been measured as 40-53 dB L_{Aeq} (daytime) and 20-38 dB L_{Aeq} (night-time), and also that site operation (i.e. drilling) will take place on a 24 hour basis. Therefore, there will be potential noise impacts on long-eared owls when they are at their most active (calling, hunting and feeding young), being a largely nocturnal species. Taking the ambient night-time noise level on the western boundary of the SSSI to be 20 dB L_{Aeq} (in the absence of any data to show that ambient conditions are higher), and a noise level of 50 dB L_{Aeq} arising from site operation (i.e. adopting the precautionary approach in both cases), it is apparent that the 20-25 dBA limit set in the US Fish and Wildlife Service guidance would in fact be exceed in at least part of the SSSI, contrary to what is stated in Technical Note C. **This therefore requires further comment**, and also underlines the importance of knowing more precisely where long-eared owls are present within the SSSI.

Irrespective of this, it is stated that additional mitigation could be incorporated into the design and layout of the application site. Again taking a precautionary approach, and in light of the inherent uncertainties encountered when determining the effects of noise on birds in this case, I consider that such additional mitigation will be necessary, should planning permission be granted. It is stated that this could be secured by condition, but **I request that outline details are provided now, to demonstrate what such mitigation would involve** (e.g. screening), and how this would attenuate noise intrusion into the SSSI. Monitoring would also be required to demonstrate that noise generated by the project is falling within agreed limits, along with monitoring of long-eared owl nesting activity to examine whether nesting success is being affected; a condition should be used to secure such monitoring.

In any event, the views of Natural England must be sought on this matter, given the SSSI status of the site and the fact that long-eared owls contribute to one of the interest features for which the site is designated.

2. Indirect impact on bats

No bat surveys were carried out at the site, based on the rationale that there are no pathways for potential impacts on bats. However, I queried a number of matters relating to bats, in relation to roosts and the impacts of lighting on bat activity.

Bat roosts

It was stated in the Ecology Chapter of the ES that no trees or buildings with bat roost potential were found within the zone of influence of the proposed development, and that there was therefore no potential for bat roosts to be impacted. However, it was not clear what the zone of influence was considered to be, nor whether any assessment of buildings with regards to their potential to support roosting bats had actually been carried out. Whilst I accepted that no buildings would be directly affected by the proposals, a number are located in relatively close proximity to the application site, along with boundary vegetation suitable for bat foraging/commuting, which would be subject to elevated levels of noise and lighting.

It has been confirmed in Technical Note C that further consideration has been given to bats, with the results of a bat roost assessment carried out by AECOM in November 2015 provided in Appendix D, originally produced in conjunction with the related application for groundwater monitoring boreholes. In summary:

- All trees and buildings within and immediately adjacent to the application site were appraised for their bat roost potential by a suitably experienced ecologist on the 9th April 2015,
- All trees were confirmed to be unsuitable for roosting bats. This assessment was validated on the 11th November 2015, when another ecologist re-inspected all trees and reached the same conclusion.
- With the exception of one, all buildings were considered to have no/negligible bat roost potential and showed no evidence of usage by bats. The exception was Misson Springs Cottage, which was considered to have high bat roost potential.

Technical Note C states that Misson Springs Cottage is c.220m from the wellsite and associated sources of potential disturbance (such as noise and artificial light), and that this is considered to be more than sufficient to attenuate any effects of disturbance. It is specifically stated that "*it is considered highly unlikely that the proposed development, because it involves temporary works of short duration, would result in disturbance sufficient to adversely affect favourable nature conservation status of any bat roosts present, and therefore there would be no reasonable likelihood of an offence being triggered under the [Habitats] Regulations*". Having reviewed the submitted information, I am satisfied that the proposals are unlikely to give rise to significant impacts upon roosting bats.

Bat activity

The Ecology Chapter of the ES stated that "*the lighting assessment has confirmed that there are no pathways for potential impacts on bats (further confirming that specific surveys are unnecessary) as there would be no significant light spill or glare onto habitats of potential value to bats*". However, it appeared that the only ecological receptor that had been considered was the nearest edge of the Misson Training Area SSSI; paragraph 2.3 of the Lighting Assessment also mentioned woodland and watercourse habitats, but it did not appear that specific consideration has been given to these. Given that such features (including the woodland shelterbelts on the northern and eastern boundaries of the development area) could be used by foraging and commuting bats - which must be assumed in the absence of survey data to demonstrate otherwise - the aforementioned statement therefore appeared to be unsupported.

A further assessment has been provided regarding lighting (Appendix E of Technical Note C), which indicates that only a small area of plantation woodland would be affected by an increase in light spill of between 0.5 and 2 lux, with most below 1.5 lux. In terms of noise, it

appears that boundary vegetation could experience noise levels of up to 65 dBA $L_{Aeq.}$ However, the submission notes that bats are encountered foraging in noisy (e.g. urban) environments, and potential impacts would, in any case, be limited both spatially and temporally. As a result, Technical Note C states that suitable bat foraging or commuting habitat *'is to be unlikely significantly affected'* by the proposals, or *'is of such limited extent to preclude any significant effects on any local bat population occurring*'.

Having reviewed the submitted information, and given the temporary and short-term nature of the proposals, I would accept that any significant impact on bat activity as a result of artificial lighting and noise is unlikely. However, it would be necessary to strictly control light and noise levels at the site boundary through the use of a condition, such that actual levels comply with the predicted levels.

3. Indirect impacts on reptiles

Reptile surveys confirmed the presence of both common lizard and grass snake at the site, including juveniles (indicating breeding), utilising the semi-improved grassland. The relative size of the reptile population was not quantified, but reptiles were recorded on all seven of the survey visits with peak counts of four grass snakes and one common lizard. This population category assessment has now been undertaken, and the populations of grass snake and common lizard are assessed as falling into the 'low' population size category.

I also queried the potential impact of vibration on reptiles as a result of drilling, noting that whilst the drills to be utilised are stated as transferring relatively small amounts of energy into the ground (with ground borne vibration being "*imperceptible at distances of around 20 metres*"), this was presumably in the context of human perception. This matter has been given further consideration, as requested. It has been pointed out that the wellsite is located in the centre of a hardstanding area that is unsuitable for reptiles, and that in any event, reptiles occur in situations where they experience noise and vibration (such as road verges and railway embankments). I am satisfied that this matter has therefore been addressed, but note that it would be desirable to deliver the habitat enhancements suggested in section 5.15 of Technical Note C. Therefore, in the event that planning permission is granted, I would welcome a condition requiring the production of a Reptile Habitat Enhancement Plan based on section 5.15.

4. Indirect impacts on SSSI habitat

Air quality

Air quality was considered in Chapter 8 of the ES (Volume 3), and included an examination of the impacts of acid deposition, atmospheric NO_x and nutrient nitrogen deposition on sensitive habitats. Impacts were screened out for all of the selected ecological receptors (which covered nationally/internationally designated sites), with the exception of the Misson Training Area SSSI. Impacts from NO_x and nutrient nitrogen were assessed as insignificant/scoped out for this site, but impacts from acid deposition were given further consideration. However, it was ultimately concluded that the "*impact of the proposed development on air quality is assessed as being unlikely to have any effect on the conservation status"* of the Misson Training Area SSSI.

Given the technical nature of the air quality assessment, the nationally designated status of the Misson Training Area (and other sites), and the apparently high level of deposition that would arise at this site from the development (for example, a Process Contribution of 2.497kgN/ha/yr for nutrient nitrogen within the SSSI – see also figure C6 of Appendix C of the ES), I considered that it was essential that specific reasoned comments should be sought from Natural England regarding air quality impacts on this site (and the Environment Agency if appropriate). I also noted that it was not made clear which APIS habitat types were used as part of the assessment process.

Whilst Technical Note C reiterates the assertion that the proposals would be unlikely to have any effects on the conservation status of the SSSI, it remains the case that the views of Natural England (and potentially the Environment Agency) must be sought.

Hydrology

In my previous comments, I stated that I was not commenting on hydrological impacts, noting that specialist advice should be sought in this respect from the Environment Agency or other appropriate source. Further information has been provided in Technical Note C (and Appendix A) in relation to hydrology (presumably in response to concerns raised by NWT and covered in the NCC Regulation 22 request).

I would note that the footprint of the well pad (where water will be collected and disposed of off-site) is stated as being 0.8ha, or 0.7% of the 112ha catchment to the edge of the SSSI, and that the loss of this part of the catchment would equate to a reduction in water depth of less than 1cm in the Gresham Drain (with a 'typical' water depth in the drain stated as being 10-15cm), and that this is '*considered to be insignificant in terms of potential impact upon the wider SSSI*'. Nevertheless, given the influence that the Gresham Drain has on water levels in the SSSI, and due to the technical nature of the assessment, I again defer to the Environment Agency (and/or Natural England) to comment in detail on this aspect of the submission given its potential implications for the SSSI.

5. Site selection process

I previously highlighted that section 5.7 of the ES (Volume 3) described the site selection process, identifying the presence of ecological designations as one of a number of constraints. It was specifically stated therein that one of the key criteria used in identifying a suitable location for the development was that "*sites should not be adjacent to or within Sites of Special Scientific Interest (SSSIs) or Local Wildlife Sites (LWS)*". I noted that whilst not 'immediately' adjacent to the Misson Training Area SSSI (as the site is separated from it by an arable field), the site clearly is 'adjacent', and is only 130m from it at its nearest point; it was therefore queried what criteria/distance thresholds were used to determine whether areas were 'adjacent' or not, given that a figure of 200m was used in relation to residential properties and listed buildings.

Technical Note A provides further information on site selection. Section 4.1.5 states that "*Based on the constraints mapping, the following key criteria have been identified as providing a basis for the identification of a suitable location for a potential temporary exploratory wellsite: … Sites should not be located within or adjacent to designated high / national level sites of environmental protection, and should benefit from a suitable buffer between the site and ecological features that could have their integrity unacceptably / disproportionately compromised by the proposed development*". Unfortunately, no definition

of ‘adjacent’ is provided (or of the width of a suitable buffer). Given that the site’s proximity to Misson Training Area SSSI, it could readily be argued that the application site is ‘adjacent’ to this nationally designated site, noting that the dictionary definition of ‘adjacent’ includes, variously, ‘lying near’, ‘close to’, ‘next to’ and ‘not distant from’.

Site selection is also briefly addressed in section 6.16 of the Regulation 22 response. It is stated that in undertaking the site selection and assessment of alternatives, ‘*a weighting was given to constraints that have the potential to be effected by the proposed wellsite and have been assessed based upon professional judgement knowledge of the mitigation measures that can be applied*’. No further information about this weighting process is provided (i.e. what weight was given to the presence of a SSSI, and how this compared to weightings for other considerations), so it remains unclear how the site assessment process was carried out.

I trust you will find the above comments of use, but if you require any further information, please do not hesitate to contact me.

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