



Angus Energy Plc

Balcombe 2z Hydrocarbon Well Testing

Discharge of Planning Conditions 10 and 17

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Angus Energy Plc

Balcombe 2z Hydrocarbon Well Testing: Discharge of Planning Conditions 10 and 17

661913 Rev01

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1 INTRODUCTION

Angus Energy Plc is seeking to discharge a number of planning conditions in relation to the exploration and appraisal of the existing hydrocarbon lateral borehole at Lower Stumble Hydrocarbon Exploration Site, London Road, Balcombe, Haywards Heath, West Sussex, RH17 6JH.

Planning permission for the works (Ref: WSCC/040/17/BA) was received from West Sussex County Council on 27th October 2017.

This report provides information to discharge the following pre-commencement planning conditions. This document has been prepared by RSK Environment Ltd on behalf of Angus Energy Plc.

Table 1-1: Planning Conditions to be Discharged

Planning Condition Number	Planning Conditions
10	<p>Development shall not begin until a Lighting Strategy, assessed by a suitably-qualified ecologist, has been submitted to and approved in writing by the Minerals Planning Authority. The Lighting Strategy shall include continuous monitoring and recording of light levels throughout the site (including site boundaries) and:</p> <ul style="list-style-type: none"> a) Re-assessment by suitably-qualified ecological consultant of the impact of the site's lighting regime on the surrounding vegetation at night within 7 days of its installation; b) Measures for immediate remedial action should the assessment carried out at (a) indicate that light spill exceeds 1 lux; and c) Within 14 days of the installation of site lighting, submission to the Minerals Planning Authority of a report detailing the impact of the lighting on the surrounding vegetation. The report shall detail lighting measurements (carried out in accordance with (a)), remediation undertaken and its impact, and the type and timescale of further remediation which may be required to ensure light spill onto adjacent vegetation is less than 1 lux. <p>The approved Lighting Strategy shall thereafter be implemented in full.</p>
17	<p>Prior to the commencement of development or any preparatory works a bat monitoring strategy shall be submitted to the Minerals Planning Authority for approval. The monitoring strategy will be expected to start within 7 days of this permission being implemented and will continue through the lifetime of the permission and for one year after site closure. All approved details shall be implemented in full unless otherwise approved in writing by the Minerals Planning Authority. All identified adverse impacts on bats shall be reported to the relevant site operators and the Minerals Planning Authority and ameliorated immediately. Annual reports and a final report (one year after permitted operations cease) shall be produced and submitted to the Minerals Planning Authority.</p>

2 CONDITION 10: SITE LIGHTING STRATEGY

Table 2-1: Planning Condition 10

Condition Number	Condition Requirement (as per consent)
10	<p>Development shall not begin until a Lighting Strategy, assessed by a suitably-qualified ecologist, has been submitted to and approved in writing by the Minerals Planning Authority. The Lighting Strategy shall include continuous monitoring and recording of light levels throughout the site (including site boundaries) and:</p> <ul style="list-style-type: none"> a) Re-assessment by suitably-qualified ecological consultant of the impact of the site's lighting regime on the surrounding vegetation at night within 7 days of its installation; b) Measures for immediate remedial action should the assessment carried out at (a) indicate that light spill exceeds 1 lux; and c) Within 14 days of the installation of site lighting, submission to the Minerals Planning Authority of a report detailing the impact of the lighting on the surrounding vegetation. The report shall detail lighting measurements (carried out in accordance with (a)), remediation undertaken and its impact, and the type and timescale of further remediation which may be required to ensure light spill onto adjacent vegetation is less than 1 lux. <p>The approved Lighting Strategy shall thereafter be implemented in full.</p>

2.1 Action to Discharge Condition

A lighting plan was produced by Eclipse Strategic Security in March 2018 (Eclipse, 2018) detailing the planned work and security lighting for the development. This was then reviewed by an ecological consultant to assess the likely impacts the plan would have on local bat populations, and with additional measures added through this report, amended to meet the specifications outlined in planning condition 10.

The results and proposed mitigation measures detailed in these assessments are summarised here.

2.1.1 Ecological Baseline

Ecological surveys were undertaken as part of the 2017 planning application (WSSC/040/17/BA) assessing the Lower Stumble Hydrocarbon Exploration Site for its biodiversity value (RSK Environment Ltd, 2017). Consequently it was found that although the habitats within the works footprint are not suitable for bat species, those found adjacent such as the woodland edge are of high value to local bat species.

The Preliminary Ecological Appraisal (PEA) of the site found there are a number of records of bat species within 1km and the habitat in the immediate vicinity comprises continuous, high quality habitat in the form of hedgerows, woodland edge and streams.

The site is also well connected to the wider landscape, including large areas of ancient woodland.

Further bat activity transects of the site found that at least four species of bat use the area surrounding the site, with the highest levels of bat activity being associated with the woodland edge habitat and the grassland paths bordering and dissecting the wooded areas. The species recorded at the site include Soprano Pipistrelle (*Pipistrellus pygmaeus*), Common Pipistrelle (*Pipistrellus pipistrellus*), Serotine (*Eptesicus serotinus*) and *Myotis* species.

With regards to the environmental outputs of the development, site lighting has the highest potential to impact local bat populations. Artificial lighting can affect the feeding behaviour of bats and their use of commuting routes. Studies have shown that, although species such as Serotine and Pipistrelles take advantage of the concentration of insects around lights as a source of prey, this behaviour is not true for all bat species (Stone, 2013). The slower flying, broad-winged species, such as Long-eared bats, Barbastelle, and *Myotis* species (which include Brandt's, Whiskered, Daubenton's, Natterer's and Bechstein's bats) generally avoid external lights.

Careful planning and mitigation is therefore required in regards to the lighting of the works.

2.1.2 Site Lighting

2.1.2.1 General Lighting Plan

The lighting for the site can be placed in two broad categories: work lighting and security lighting, and there will also be an enclosed flare within the site to burn off any gases associated with the works.

The work lighting is designed to allow operations to continue safely and effectively during periods of insufficient natural light and for the purposes of this development will be limited to task-based lighting towers illuminating only the area immediately around a specific task. The towers will be inward facing to reduce the amount of light spill outside of the site boundary, and will meet the below specification:

- **Lamp type** – LED
- **Lighting level** – 100 Lux
- **Colour Rendition Index (CRI)*** – good
- **Strike/restrike**** – poor
- **Position** – mounted on 5m poles, 8m inside the well site perimeter at 20m intervals; shared with perimeter lamps
- Six (6) lamps required (One on each corner; two on perimeter)
- **Shrouding** – None; lamps will be inward and downward facing.

The security lighting is designed to create conditions that deny a would-be adversary the opportunity to use darkness to conceal his or her act. For the purposes of this development the security lighting will be in the form of controlled perimeter lighting made up of standard street lighting luminaires focused on the lines of the perimeter. The luminaires will meet the below specification:

- **Lamp type** – LED
- **Lighting level:**
 - Perimeter - 5 Lux, minimum
 - Vehicle entrance gate – 50 Lux
- **Colour Rendition Index (CRI)*** – good (for use with CCTV)
- **Strike/restrike**** – instant
- **Position** – mounted on 5m poles, 8m inside the well site perimeter at 20m intervals
- 10 lamps required (8 on perimeter, 2 at vehicle gate)
- **Shrouds** – each lamp shall be fitted with a shroud to prevent spill over into the surrounding vegetation

An essential part of the testing equipment be located on the site is an enclosed flare with a maximum height of 13.7m, this will be situated within the stone drilling platform which has negligible potential for foraging and commuting bats.

2.1.2.2 Mitigation

To account for the potential impact the lighting regime will have on adjacent bat habitat, the following measures will be used when designing and installing the lighting system.

- The need for night working will be avoided where possible and lights will be turned off when not required.
- White LED lights will be used which are found to be one of the least impactful lamp types for bats (Stone, 2013).
- Lighting cowls and shrouds will be utilised to reduce light spillage to areas outside of the works footprint.
- Lights will be mounted on 5m poles, allowing for the dissipation of light before reaching adjacent habitats.
- Task-based lighting will be inward facing to avoid light spill to areas outside of the works footprint.
- Security lighting will be angled downwards to an extent that the light spill reaching the adjacent bat habitat will not exceed 1 lux.

2.1.2.3 Monitoring

Once the lighting has been installed light levels throughout the site will be continuously monitored and recorded. Additionally a suitably qualified ecologist will visit the site and, with the aid of a lux meter and a bat detector, will measure the level of light spill reaching the habitats adjacent to the work area and record the level of bat activity in these habitats in order to assess the impact of the lighting on the surrounding vegetation. This survey will be scheduled no more than seven days from the installation of the lighting.

Should the light spill exceed 1 lux, or if there is evidence that the lighting scheme is having an adverse impact on bats, then immediate remedial action will be required to

reduce the amount of light reaching bat suitable habitat. Actions that may be used to reduce the light level include:

- The fitment and adjustment of shrouds that will prevent the spill over of light into the surrounding vegetation.
- The adjustment of luminaires downwards until the light level is at least 1 lux.
- If these measures do not reduce light spill to the necessary degree, then the repositioning or turning off of lights will be considered.

Within 14 days of the installation of lighting, a summary of remedial actions taken will be provided together with an updated lighting strategy.

2.1.3 Summary

It is considered that the above information provides sufficient reassurance that the lighting to be installed within the site will have a negligible impact on adjacent habitat. Should the initial set up have any impact on the adjacent habitats or bat populations, this will soon be detected through the monitoring and ameliorated through corrective actions and therefore any impact on bats will be short term. Based on these measures, the site lighting strategy is approved by a suitably qualified ecologist.

3 CONDITION 17: BAT MONITORING STRATEGY

Table 3-1: Planning Condition 17

Condition Number	Condition Requirement (as per consent)
17	Prior to the commencement of development or any preparatory works a bat monitoring strategy shall be submitted to the Minerals Planning Authority for approval. The monitoring strategy will be expected to start within 7 days of this permission being implemented and will continue through the lifetime of the permission and for one year after site closure. All approved details shall be implemented in full unless otherwise approved in writing by the Minerals Planning Authority. All identified adverse impacts on bats shall be reported to the relevant site operators and the Minerals Planning Authority and ameliorated immediately. Annual reports and a final report (one year after permitted operations cease) shall be produced and submitted to the Minerals Planning Authority.

3.1 Action to Discharge Condition

This bat monitoring strategy details the survey methods and effort required to effectively monitor bat activity in and around the site. Should changes in the level of activity surrounding the site be detected, then this may indicate that the development is having an adverse impact on local bat populations and will therefore require further investigation. If the development is having a significant impact on local bat populations then works to mitigate this will be immediately implemented. The bat monitoring strategy is described below.

3.1.1 Bat Baseline Assessment

Ecological surveys were undertaken as part of the 2017 planning application (WSCC/040/17/BA) assessing the Lower Stumble Hydrocarbon Exploration Site for its biodiversity value (RSK Environment Ltd, 2017). Consequently it was found that although the habitats within the works footprint are not suitable for bat species, those found adjacent such as the woodland edge are of high value to local bat species.

The PEA of the site found there are a number of records of bat species within 1km and the habitat in the immediate vicinity comprises continuous, high quality habitat in the form of hedgerows, woodland edge and streams. The site is also well connected to the wider landscape, including large areas of ancient woodland.

Further bat activity transects of the site found that at least four species of bat use the area surrounding the site, with the highest levels of bat activity being associated with the woodland edge habitat and the grassland paths bordering and dissecting the wooded areas. The species recorded at the site include Soprano Pipistrelle (*Pipistrellus pygmaeus*), Common Pipistrelle (*Pipistrellus pipistrellus*), Serotine (*Eptesicus serotinus*) and *Myotis* species.

A bat roost assessment of the site was conducted at the time of the PEA, and while some potential roosting sites were found within the survey area, these are outside the development area and its zone of influence.

3.1.2 Monitoring Objectives

The site and its surroundings have been identified as having value at a local level for bats. The abundance of edge and linear habitats such as woodland edge, hedgerows and streams provides high quality commuting and foraging habitat for a number of different bat species. High levels of activity were recorded from at least four different bat species during bat activity surveys in 2017.

There is the potential for disturbance to bats if the works are left unmitigated, although through the inclusion of mitigation it is unlikely that the works will have an adverse effect on local bat populations. It is the objective of this monitoring strategy to record bat activity at the site to either confirm no significant impacts arising from the development on local bat populations, or to identify impacts for their immediate mitigation and amelioration.

3.1.3 Monitoring Strategy

The monitoring strategy will replicate the methodology used to survey bats prior to the development commencing. This allows for the comparison of data collected during the monitoring period to the baseline data collected during 2017. Therefore the monitoring scheme for the development will be as follows:

- Three bat activity transects will be walked across the site and its adjacent habitats on an annual basis. These transects will follow the same routes as those conducted during the 2017 baseline surveys.
- The surveys will be completed according to best practice guidelines, and will be spread over the survey season so that one survey is completed in late May/early June, one survey is completed in late June/early July, and one survey is completed in late July/early August.
- The May/early June survey will be undertaken pre-commencement to provide additional survey baseline.
- Following each of these transect surveys, a static bat recorder will be installed within the site boundary to record levels of activity surrounding the compound. These will be left to record for three consecutive nights in weather conditions suitable for bat activity.
- The data from both the transects and static bat recorders will be gathered and analysed within three weeks of each survey to assess the level of bat activity in and around the site. The data will be analysed by a bat licensed consultant with significant experience in designing bat mitigation. The data will then be compared against the baseline data gathered in 2017.
- If through the results of these surveys, it is thought that there is an adverse effect to local bat populations arising as a result of the development, then it will be reported to the relevant site operators and the Minerals Planning Authority. Mitigation work will then be immediately implemented to reduce these impacts where applicable.



- The results of these surveys will be reported to the Minerals Planning Authority on an annual basis, and a final report summarising the monitoring of the entire operations will be submitted to the Minerals Planning Authority one year after permitted operations cease.
- The monitoring program will be implemented from within the first seven days of the commencement of the works, and will continue throughout the lifetime of the development and for one year after site closure.

4 REFERENCES

Eclipse Strategic Security Ltd (2018) Balcombe Well Site, Lower Stumble, Balcombe – Lighting plan. Unpublished.

RSK Environment Ltd (2017). Balcombe 2z Hydrocarbon Well Testing – Environmental Report. Unpublished.

Stone, E.L. (2013) *Bats and lighting: Overview of current evidence and mitigation*.

Available at: [http://www.bats.org.uk/data/files/Bats_and_Lighting -](http://www.bats.org.uk/data/files/Bats_and_Lighting_-_Overview_of_evidence_and_mitigation_-_2014_UPDATE.pdf)

[_Overview of evidence and mitigation - 2014 UPDATE.pdf](http://www.bats.org.uk/data/files/Bats_and_Lighting_-_Overview_of_evidence_and_mitigation_-_2014_UPDATE.pdf) [Accessed: 24/04/2018]