



Angus Energy Plc

Noise Management Plan

Balcombe 2z hydrocarbon – Extended Well Test

JUNE 2020 (v01)



1 Introduction

This report has been prepared on behalf of Angus Energy Weald Basin No.3 Ltd (hereafter ‘Angus Energy’) for the proposed removal of drilling fluids and Extended Well Test (EWT) on land at Lower Stumble Wood, Hydrocarbon Exploration Site, London Road, Balcombe, Haywards Heath, RH17 6JH (hereafter ‘the site’).

1.1 Site History

The site has an established planning history, having been first used for exploratory drilling from 1986-1987 with the pad subsequently retained for use by Balcombe Estate (the current landowners) for forestry product storage.

The Balcombe 2Z Hydrocarbon Borehole was established in 2013 for gas and oil exploration, and the site has since been subject to several planning applications.

More recently, Angus Energy submitted an application for planning permission (planning ref. WSCC/071/19) in September 2019 for a two-stage activity, firstly to remove previously used drilling fluids from the wellbore, followed by an EWT to be carried out over a period of three years. This application was subsequently withdrawn.

1.2 Application Details

The proposed work on the Balcombe 2Z Well will take place in four distinct phases, with planning and regulatory approvals at each phase. These are as follows:

- **Phase 1 – Removal of Wellbore Fluids:** phase 1 of the works has been designed to remove wellbore fluids which are currently preventing the natural formation fluids from entering the well. This phase would effectively clean up the well in preparation for undertaking an EWT.
- **Phase 2 – Pad Membrane:** For the site to meet established onshore oil and gas standards, a site-wide impermeable membrane will be installed by a civil engineering contractor.
- **Phase 3 – Extended Well Test:** The objective of the EWT is to enhance subsurface data so Angus Energy can start estimating potential production reserves, assess the commerciality of the well and obtain empirical data e.g. water cut data, flow rates and hydrocarbon composition. The EWT is a continuation of the exploration phase to prove that a hydrocarbon resource exists.
- **Phase 4 – Plug and Site Restoration:** Phase 4 involves removing all of the surface plant and equipment from the site as well as plugging the wellbore to the prevailing HSE standards. Upon completion the site will be restored, with 50% of the pad to become deciduous woodland in accordance with the High Weald AONB Management Plan 2019-2024.

In order to demonstrate exceptional circumstances and ensure that the development does not compromise the landscape qualities of the High Weald AONB, the proposal has been modified to decrease impact to visual amenity, and a habitat restoration plan will be implemented during Phase 4 of the operation. Please refer to the Landscape and Visual Appraisal and associated plans and drawings for further details.

2. Management of Noise Impacts

The requirement to use Best Practicable Means (BPM) to mitigate the effects of noise and vibration is set out in section 72 of the Control of Pollution Act 1974 and section 79 of the Environmental Protection Act 1990. Best Practicable Means incorporates two essential elements:

- Practicable – this is defined as reasonably practicable having regard, among other things, to local conditions and circumstances; the current state of technical knowledge; and to financial implications; and
- Means – these are the means to be employed, including design, installation, maintenance, manner and periods of operation of plant and machinery; and the design, construction and maintenance of buildings and structures.

3. Plant Repair and Maintenance

All planned repairs and maintenance of plant shall be undertaken during normal working hours. By exception repair and maintenance may need to be carried out outside normal working hours. Activities outside normal working hours that could give rise to disturbance will be kept to a practicable minimum. Such maintenance activities shall only be undertaken within the site compound and behind the site hoarding.

4. Noise Control

The contractor will, in so far as is reasonably practicable, control and limit noise levels so that residential properties and other sensitive receptors are protected from excessive noise from the site. Best Practicable Means (BPMs) shall be employed at all times and for all stages of set up, operation, and decommissioning of the site.

Details of the site activities and steps to minimise noise are set out in this NMP. Any changes to the noise monitoring methodology set out in this plan, working practices or equipment to be used that affect the offsite noise level will be discussed with West Sussex County Council (WSCC). Noise prediction, evaluation and assessment of noise will, by necessity, be a continuous activity throughout all stages of set up, operation, and decommissioning of the site.

Measures to be considered in implementing BPMs will be consistent with condition 15 (Shown in Appendix B) and the recommendations of BS5228-1:2014 'Code of practise for noise and vibration and open sites' and will, where reasonably practicable, include BMPs shown within Section 23.

5. Noise Limit Criteria

The Minerals Planning Guidance (MPG) (published in 2014) is the means by which noise during minerals extraction is considered within the planning regime. The Minerals Planning Guidance is used by planning authorities to manage mineral extraction. The document provides noise limits to be met during minerals extraction. The noise limits from the Minerals Planning Guidance are presented in Table 5.1.

Table 5.1 Assessment Criteria

Time Period	First Aim	Alternative Limit
Day 07:00 – 19:00	Background $L_{A90,T}$ + 10dB	As close as possible to the $L_{A90}+10dB$, with an upper limit of 55 dB $L_{Aeq,1\text{ hour}}$
Evening: 1900 – 2200		Background $L_{A90,T} + 10dB$
Night: 2200 - 0700		42 dB $L_{Aeq,1\text{ hour}}$

Increased temporary daytime noise limits of up to 70dB(A) L_{Aeq} 1h (free field) for periods of up to 8 weeks in a year at specified noise-sensitive properties should be considered to facilitate essential site preparation and restoration work and construction of baffle mounds where it is clear that this will bring longer-term environmental benefits to the site or its environs.

Where work is likely to take longer than 8 weeks, a lower limit over a longer period should be considered. In some wholly exceptional cases, where there is no viable alternative, a higher limit for a very limited period may be appropriate in order to attain the environmental benefits. Within this framework, the 70 dB(A) L_{Aeq} 1h (free field) limit referred to above should be regarded as the normal maximum.

6. Baseline Noise Measurements

Unattended and attended noise measurements were taken between 20 September 2017 and 28 September 2017. The results of the survey are summarised in Tables 6.1 and 6.2. A full set of measurement data can be available upon request. Monitoring locations are shown in Figure 1.1.

Table 6.1 Attended Noise Level Measurement Results

Location	Date	Time Period	Start Time	Duration (hh:mm)	Statistical Parameters (dB)			
					$L_{Aeq,T}$	$L_{AFmax,T}$	$L_{A10,T}$	$L_{A90,T}$
R2	20/09/17	Day	17:26	01:00	59.5	88.3	49.1	37.8
	28/09/17	Evening	19:34	01:00	35.1	59.4	37.0	29.0
	21/09/17	Night	23:15	01:00	33.3	57.2	36.0	26.3
R3	20/09/17	Day	16:14	01:00	49.5	75.3	46.8	40.4
	21/09/17	Evening	21:05	01:00	44.7	74.7	39.6	29.9
	21/09/17	Night	22:05	01:00	39.3	73.8	36.6	26.7
R4	20/09/17	Day	12:26	01:00	51.0	80.3	53.2	45.0
R4	28/09/17	Evening	20:50	01:00	43.2	74.9	44.0	31.6
	20/09/17	Night	00:22	01:00	28.6	60.0	30.3	23.7
R5	21/09/17	Day	11:11	01:00	70.3	89.8	74.7	47.4
	21/09/17	Evening	19:33	01:00	69.9	87.5	73.0	40.7
	20/09/17	Night	22:00	01:00	63.5	87.3	61.6	30.2

Table 6.2 Unattended Noise Level Measurement Results

Date	Time Period	Start Time	Duration (hh:mm)	Statistical Parameters (dB)			
				$L_{Aeq,T}^{(a)}$	$L_{AFmax,T}$	$L_{A10,T}^{(a)}$	$L_{A90,T}^{(a)}$
20/09/17	Day	17:26	12:00	54.7	84.5	56.0	43.3



Date	Time Period	Start Time	Duration (hh:mm)	Statistical Parameters (dB)			
				L _{Aeq,T} ^(a)	L _{AFmax, T}	L _{A10,T} ^(a)	L _{A90, T} ^(a)
	Evening	19:00	03:00	50.9	79.3	51.4	37.2
	Night	22:00	09:00	51.3	87.8	43.9	33.9
21/09/17	Day	07:00	12:00	54.3	87.8	56.2	44.9
	Evening	19:00	03:00	48.7	76.3	48.7	38.8
	Night	22:00	09:00	50.3	90.7	43.0	35.4
22/09/17	Day	07:00	12:00	63.9	88.9	58.4	41.9
	Evening	19:00	03:00	50.3	74.1	50.8	39.1
	Night	22:00	09:00	51.9	90.7	44.0	35.7
23/09/17	Day	07:00	12:00	55.7	89.5	55.0	40.9
	Evening	19:00	03:00	49.7	81.8	50.2	37.0
	Night	22:00	09:00	45.9	84.1	43.2	33.4
24/09/17	Day	07:00	12:00	55.1	87.5	53.4	40.7
	Evening	19:00	03:00	49.6	76.5	50.9	39.8
	Night	22:00	09:00	32.5	62.0	37.7	34.6
25/09/17	Day	07:00	12:00	54.0	92.1	53.7	40.4
	Evening	19:00	03:00	49.0	67.2	47.6	35.1
	Night	22:00	09:00	44.6	73.6	40.4	33.0
26/09/17	Day	07:00	12:00	53.3	85.3	53.4	39.8
	Evening	19:00	03:00	50.0	73.4	49.0	36.6
	Night	22:00	09:00	51.5	90.5	42.8	33.5
27/09/17	Day	07:00	12:00	53.6	84.8	55.0	41.9
	Evening	19:00	03:00	N/A ¹	N/A ¹	N/A ¹	N/A ¹
	Night	22:00	09:00	42.8	76.2	51.2	37.1
28/09/17	Day	07:00	11:00	64.6	93.7	56.1	41.8
Summary			Day	59.1	93.7	55.2	41.7
			Evening	49.8	81.8	49.8	37.7
			Night	48.9	90.7	43.3	34.6

^(a) L_{Aeq,T} values are the logarithmic average of L_{Aeq,15min} samples, and the L_{A10,T} and L_{A90,T} are the arithmetic average of L_{A10,15min} and L_{A90,15min} samples respectively.

7. Working hours

Site operation and the movement of all Heavy Goods Vehicles (HGVs) to and from the site will be undertaken during standard working hours i.e. 07:00 to 19:00 Monday to Sunday. Contingency works will be undertaken over 24 hours where required. The total duration of each phase will be as follows:

- Phase 1 Removal of Wellbore Fluids – 4 weeks

¹ Data excluded due to rain during this period.



- Pumping will be 24/7
- Vehicle movements will be 07:00-19:00 Monday to Sunday
- Phase 2 Pad Membrane – 8 weeks
 - Works will occur during 07:00-19:00 Monday to Sunday
- Phase 3 Extended Well Test – 1 year
 - Well testing will run 24/7
 - Vehicle movements will be 07:00-19:00 Monday to Sunday
- Phase 4 Plug and Site Restoration – 8 weeks
 - Works will occur during 07:00-19:00 Monday to Sunday

8. Identification of Sensitive Receptors

This section identifies the existing noise sensitive receptors within close proximity of the site. These receptors are shown in Table 8.1 below.

Table 8.1 Existing Sensitive Receptors near to site location

ID	Receptor	Co-ordinates	Distance form site (m)
R1	Kemp Farm	530830.84, 129575.86	380
R2	Upper Pilstye Cottage	530472.78, 128702.12	765
R3	Pilstye Farm Cottage	530702.37, 128498.19	810
R4	Norfolk Cottage	530252.68, 129480.83	775
R5	Peartree cottage	531564.84, 129822.91	745

The closest receptors to the site are shown in Figure 1.1 and site location is shown in Figure1.2.

Figure 1.1 Receptors and Site Location

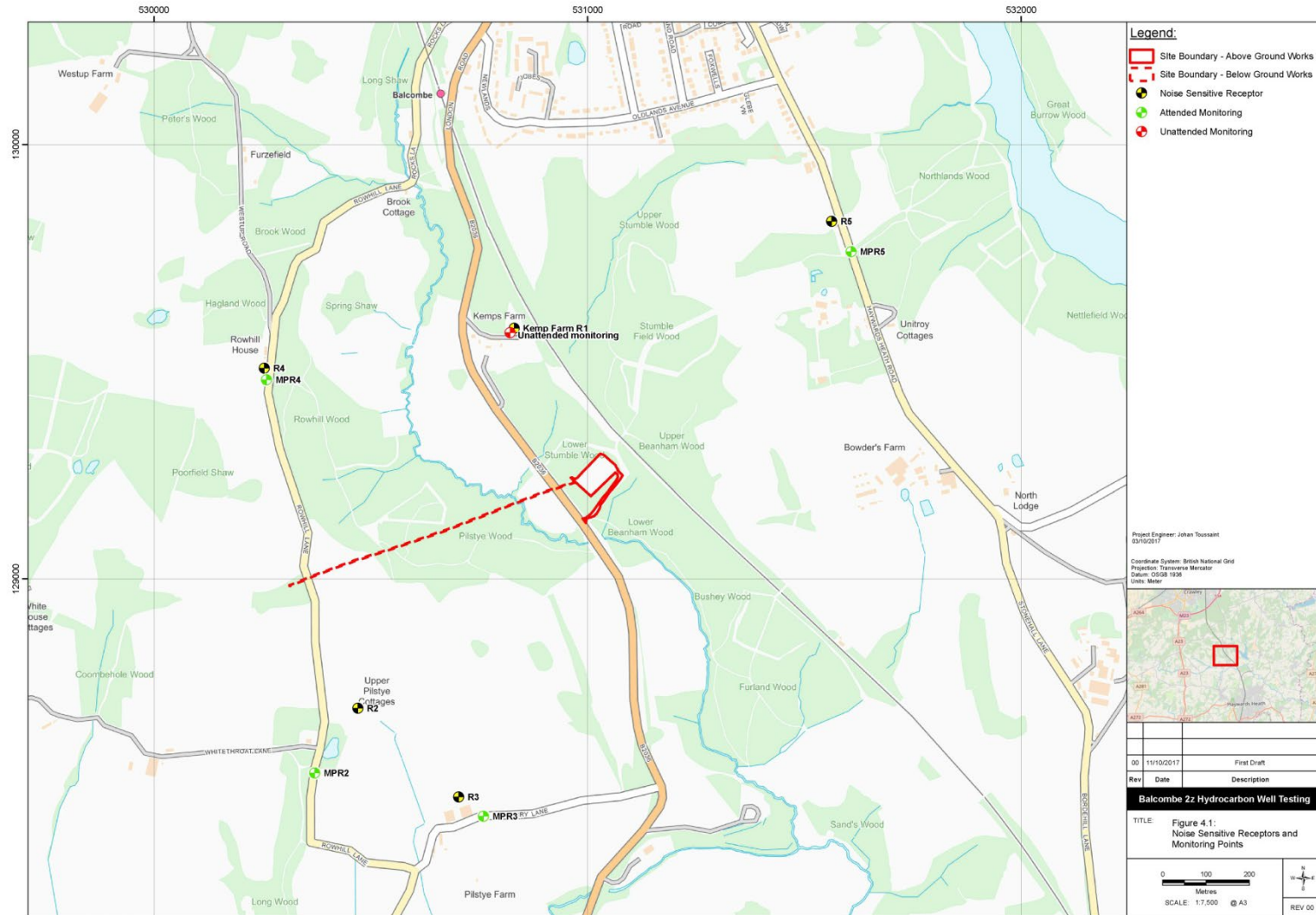
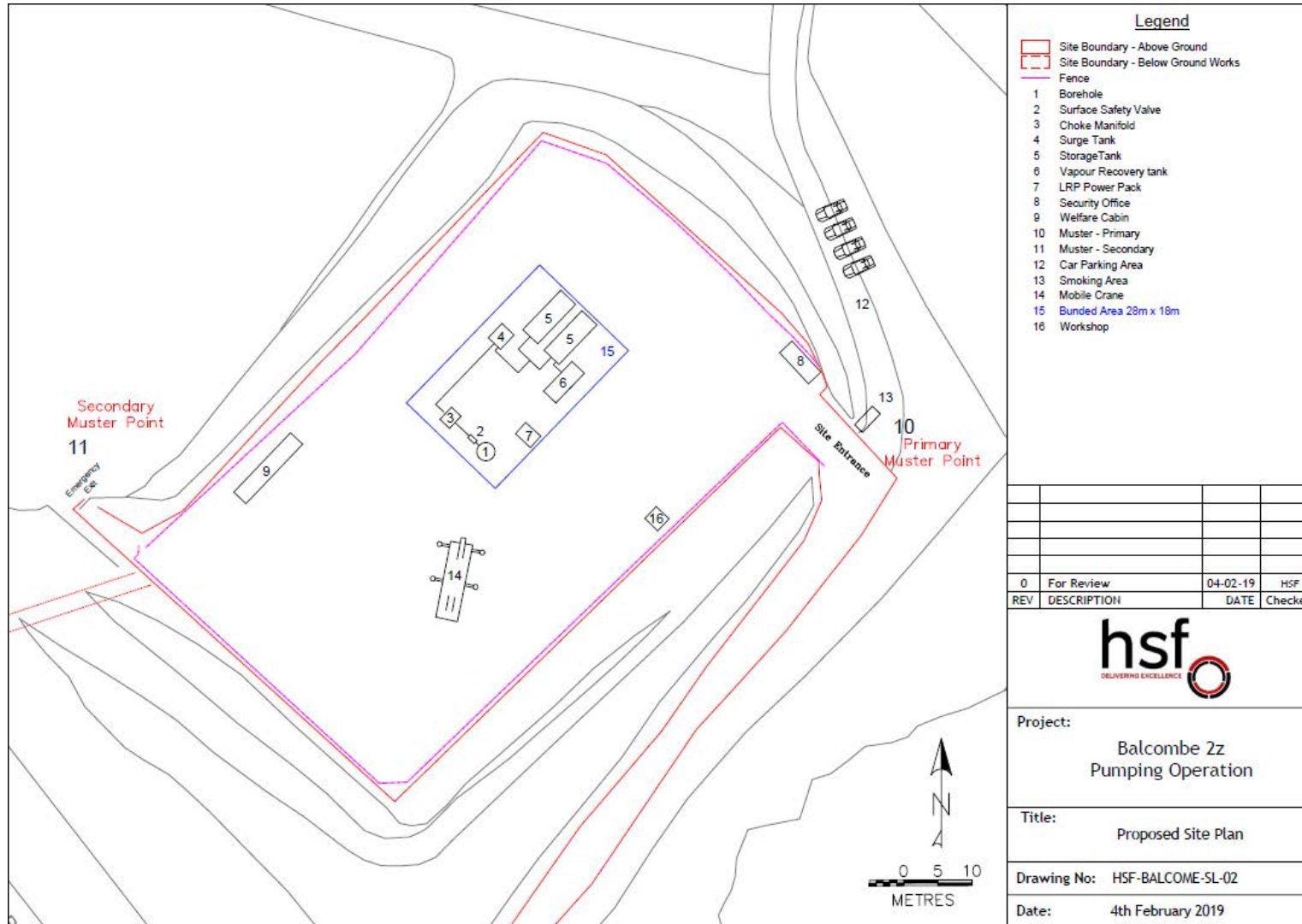


Figure 1.2 Site Layout



9. Plant Noise Level

Full details of the calculation of operational noise levels are given in Appendix A, including the main items of plant and the noise level attributed to the plant. The following plant and equipment will be required to support the proposed operations of phases 1 and 3, including plant equipment for contingency operations:

Phase 1 – Pumping remaining drill fluids – equipment

- Surge Tank – Low pressure separator;
- Associated Pipe Work & Manifolding;
- Oil & waste storage tanks;
- LRP – Linear Rod Pump; and
- Vapour Recovery Tank.

Phase 3 – Extended Well Test (EWT) – equipment

- Test Separator Unit;
- Onboard data acquisition and reporting system;
- Associated Pipework & Manifolding Package;
- Surface system;
- Flare;
- Choke Manifold;
- Surge Tank – Second stage separator;
- Oil & waste storage tanks;
- LRP – Linear Rod Pump; and
- Vapour Recovery Tank (as per EA specifications).

Phase 3 Contingency 1 – Nitrogen Lift – equipment

If nitrogen lift is required, the below kit would be additional to kit listed for stage 2 operations.

- Coiled tubing unit incl. injector head and reel;
- Nitrogen Converter; and
- 2 – 4 Nitrogen tanks.

Phase 3 Contingency 2 – Acid Wash with Coiled Tubing (CT) – equipment

If an acid wash is required, the below kit would be additional to kit listed for stage 2 and contingency 1 operation.

- HCl Acid Truck.

10. Operational Noise Emissions

Plant noise levels associated with the well testing operations have been obtained from Angus Energy Plc. For generic, non-specific items of plant are obtained from Annex C and D of BS

5228:2009+A1:2014 used to estimate the plant levels of plant measured at 10 m. All items of plant have been converted to sound power levels (L_{WA}) and have been represented as point and areas sources where appropriate.

The operational resultant noise emissions are set out in Section 15.

11. Noise Calculations

Worst-case operational noise levels from each activity have been calculated, using the methodology set out in Annex F of BS 5228:2009+A1:2014. Although the operations on site could be classed as either ‘operational’ or ‘construction’ for the purpose of predictions it is felt the calculation algorithm in BS5228 is most appropriate. The calculations have been set up to predict maximum noise levels from each activity at worst case sensitive receptors, considering the plant in operation at closest distance of approach from the receptor.

The noise predictions at each considered receptor have been compared to the noise criteria limits as defined in Table 5.1, Section 5. This was accomplished in order to assess the significance of the impact against the criteria as a result of the operational noise from the site.

12. Noise Modelling

A computer noise model has been created in order to determine the plant noise level at the façade of the nearest receptors arising from operations within the site. Predictions have been undertaken using Soundplan v8.1, which incorporates methodology specified within BS 5228. The noise prediction method described in BS 5228 is suitable for construction and open site activities where noise sources are likely to be mobile.

The model has been set up using the following parameters:

Table 12.1 Modelling parameters

Item	Setting
Algorithms	British Standard 5228:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites-Noise’
Ground Absorption	Acoustically soft (assumed 0.7 coefficient) – mostly farming land with roads and scattered houses. Acoustically hard (assumed 0.4 coefficient) – mostly gravel and high-density polyethylene (HDPE) membrane around the well area.
Meteorological Conditions	10 degrees Celsius 70% humidity Wind from source to receiver
Façade Corrections	No facade corrections are applied. Predicted noise levels are free-field.
Receptor Height	Ground Floor 1.5m above ground (daytime) First Floor 4 m above ground (night-time)
Imbedded site mitigation	Calculations have assumed localised barriers around stationary items of plant where deemed necessary (See Appendix A). Furthermore, the site benefits from a 0.5 m bund positioned around the entire work area perimeter, with a 2 m site fence positioned around external site boundary as shown with the screening request (Doc ref: ‘Screening Request - 12-06-19’).

Item	Setting
Source Modelling	Items of plant have assumed point source radiation.
Terrain	Terrain contours intervals of 2 m have been imported into the model, using 2 m resolution terrain contours.
Site Layout	Digitised based on aerial imagery with 50 cm resolution

13. Predicted Noise Levels

A summary of predicted noise levels from the different phases at the closest properties to the works and the corresponding assessment criteria is presented in Table 13.1. Due to the distance between the site and the closest residential receptors and the nature of the site noise (i.e. broadband), it is unlikely that higher frequencies would contribute significantly to the overall noise level and the tones unlikely to be present at receptors. The noise will neither be intermittent (being continuous for the time it is on) irregular, nor impulsive. Therefore, no acoustic corrections as per conditions 13 have been applied to specific noise levels of the site operations.

An assessment for the proposed operation at the site has been conducted for each of those at the most exposed facades of the residential receptors for the site operations. Predictions which exceed the assessment criteria have been highlighted.

Table 13.1 Predicted noise levels at the closest receptors

	Period	Criteria (Background $L_{A90,t} + 10\text{dB}$)	Highest Predicted Site Operation Noise Levels $L_{Aeq, T}$ (dB)		
			Phase 1	Phase 2	Phase 3
			Pumping remaining drill fluids	Pad Membrane	Extended Well Test
R1	Day	55	43	44	43
	Evening*	48	43	44	43
	Night	42	43	-	43
R2	Day	55	30	31	30
	Evening*	39	30	31	30
	Night	42	30	-	30
R3	Day	55	28	29	29
	Evening*	40	28	29	29
	Night	42	28	-	29
R4	Day	55	36	38	36
	Evening*	42	36	38	36
	Night	42	36	-	36
R5	Day	55	21	22	21
	Evening*	51	21	22	21
	Night	42	21	-	21

*Evening periods also represent weekend daytimes



	Period	Criteria (Background $L_{A90,t} + 10\text{dB}$)	Highest Predicted Site Operation Noise Levels $L_{Aeq, T}$ (dB)		
			Phase 3 – Contingency 1	Phase 3 – Contingency 2	Phase 4
			Extended Well Test + Nitrogen lift	Extended Well Test + Acid Wash with CT	Plug & Site Restoration
R1	Day	55	43	43	45
	Evening*	48	43	43	45
	Night	42	43	43	-
R2	Day	55	30	31	32
	Evening*	39	30	31	32
	Night	42	30	31	-
R3	Day	55	29	30	30
	Evening*	40	29	30	30
	Night	42	29	30	-
R4	Day	55	36	36	38
	Evening*	42	36	36	38
	Night	42	36	36	-
R5	Day	55	21	21	23
	Evening*	51	21	21	23
	Night	42	21	21	-

*Evening periods also represent weekend daytimes

The assessment of impact is undertaken by comparing the measured background noise level (L_{A90}) plus 10 dB to the predicted plant level (L_{Aeq}) at each receptor (NPPF first criteria). Since the calculated plant level (L_{Aeq}) at each receptor was above to the first aim criteria within NPPF technical guidance for night-time, it was necessary to assess the results against the alternative limit presented in Table 5.1, Section 5.

Although the calculated plant level (L_{Aeq}) at each receptor is below the ‘first aim’ criteria set in NPPF except during night-time, they are above the measured background level (L_{A90}) at some receptors. As a result, the site activities may be audible at the properties façades but are unlikely to be dominant in the existing noise environment. The above assessment indicates that noise from the site operations with respect to residential receptors is a low impact.

At R1 (Kemp Farm) the predicted noise level is + 1dB above to the noise criteria during the night-time period but is unlikely to have a significant effect. However, it should be noted that the noise predictions are considered to be worst case (based on worst case assumptions) and in practice noise levels are expected to be lower. However, if complaints are received the continuous monitoring should be undertaken at this receptor. The monitoring will follow the noise monitoring procedures with Section 17 of this document. Where exceedances of the criteria are measured in practice additional noise control measures will be identified by the project team.

14. Complaints Procedure

In the event that exceedances are identified, and complaints are raised, appropriate mitigation measures will be installed to reduce noise levels to within the specified limit. Where safe and practical works will be stopped immediately following a verified complaint and exceedance and will not be commenced until adequate noise control measures are developed and installed.

Furthermore, noise measurements will be undertaken once additional mitigation is in place, in order to check the effectiveness of those mitigation measures and the compliance with the noise

limits.

The Local Authority's Environmental Health Department will be informed in writing in the event of any noise exceedance and the measures undertaken to reduce noise levels. In the event that noise complainants are raised, the veracity of such complaints will be investigated. Part of the investigation will be based on construction site logs (identifying the works and plant used at the time of the complaints) with the rest reliant on the undertaking of noise monitoring at the complainant receptor or at a representative location. Complaints will be logged by the project team, and complainants contacted within 48 hours of the complaint to talk through the investigation process. Where monitoring is considered to be a necessity, noise monitoring will be undertaken within 72 hours of receipt of the complaint. The project team will keep the complainant updated throughout the investigation process.

15. Noise Monitoring Equipment

Where monitoring is required instrumentation meeting the standards set out in BS EN 60942: 2018 '*Electroacoustics – Sound level meters. Specifications*' will be used;

Measurements will comprise of broadband indices L_{Aeq} , L_{A10} , L_{Amax} and L_{A90} . The equipment chosen will be a Class 1 noise level meter with a suitable traceable calibration certificate.

16. Noise Monitoring Procedure – Attended Complaint Response or Attended Compliance

Should noise monitoring be requested or required during the works, the following outline procedure would apply:

- Measurements will be undertaken in accordance with British Standard BS 7445-1:2003 'Description and measurement of environmental noise. Guide to quantities and procedures',
- The noise survey will be undertaken at the receptor closest to the works, complainant's property or proxy location, whichever is considered most appropriate;
- The noise survey will be carried out during representative working hours for a duration considered representative of the activity, and where possible inclusive of worst-case activities, or those responsible for a complaint;
- The noise monitoring results will be used to assess compliance with the applicable project criteria; and
- Noise monitoring should be undertaken by a competent and qualified person.

Noise survey results will be included in a letter report to be submitted to the Local Authority Environmental Health Department within one week of the monitoring.

17. Continuous Noise Monitoring Procedure

Due to the minor predicted exceedance in noise levels at Kemps Farm (R1) during the night time period, a continuous noise monitoring regime may not be required at the boundary of the residence. However, if complaints are received at this receptor during any night time operation, then continuous noise monitoring should be undertaken. Noise monitoring equipment shall be installed in free-field conditions representative of a worst-case façade of the receptor in the

direction of the site works. Noise monitoring will be continuous over the course of 24 hour periods, where noise monitoring equipment shall comply with specification detailed in Section 15. Noise monitoring equipment will either be battery or mains powered whichever is appropriate. If exceedances over the project criteria are identified in practice, then further long-term noise mitigation shall be implemented following the mitigation procedure detailed in Section 20.

18. Noise Monitoring Reporting

Angus Energy Plc will inform WSCC within 24 hours of the occurrence of any exceedance of the project noise criteria during the attended compliance or continuous noise monitoring. Angus Energy Plc will inform WSCC of the cause of the alert and implement any remedial action that is necessary within 48 hours of the occurrence of the event. Where requested, Angus Energy Plc will submit records showing the raw data collected at the receptor(s). Noise monitoring reports shall include L_{A90} and L_{Aeq} noise levels, the prevailing weather conditions, details and calibration of the equipment used for measurement and comments on the other sources of noise which affect the noise environment. The data will be presented graphically and submitted within one week following the end of each weekly monitoring period.

19. Vibration

Through a review of the construction plant list provided by Angus Energy Plc has shown that there are no items of plant that would cause the potential to exceed threshold values in the relevant British Standards. However, if during the operational stages complaints have arisen due to excessive vibration; vibration monitoring should be conducted during a period of operation at the identified receptor in order to determine the level of significance over an appropriate threshold category identified within relevant standards.

20. Long Term Noise Mitigation

If regular exceedances of the project noise criteria are indicated in the results of any noise monitoring undertaken at Kemps Farm, long term noise mitigation measures to protect this receptor will be investigated. Long term noise mitigation is likely to be in the form of a noise barrier. Indicatively this will be the erection of temporary hoarding at 2 meters height with a minimum surface density of 15 kg/m² (or manufacturer provide evidence to confirm minimum of 10 dB reduction at 500Hz). If exceedances have been identified on regular basis then long-term mitigation will be designed and implemented in a reasonable and practical timeframe.

21. Best Practicable Means and Instantaneous Mitigation

Best Practicable Means (BPM) and instantaneous mitigation methods will be employed at all times to minimise noise and vibrations. The following general measures will be included;

- Throttling back gas flow for the flare where appropriate;
- Stopping works where safe to do so;
- Erection of acoustic screens where necessary;
- if required a temporary noise barrier must have at least 15 kg/m² surface density (or manufacturer provide evidence to confirm minimum of 10 dB reduction at 500Hz), where possible higher than the line of sight to neighbours;

- using electrically powered equipment run from the mains supply, or when this is not available, generators compliant with Euro Standard IV;
- use of screws and drills rather than nails for fixing hoardings etc;
- careful handling of materials & waste such as lowering rather than dropping items;
- taking steps to isolate the deconstruction works from sensitive neighbours, in order to minimise the transfer of vibration and structure borne noise;
- avoidance of unnecessary noise (such as engines idling between operations);
- The site layout should be designed to minimise potential effects on neighbours. A competent banksman should be employed to provide assistance to vehicles accessing and leaving the site, thereby ensuring minimal traffic disturbance and pedestrian safety.
- Vehicle movements should be planned to ensure that Lorries do not arrive or depart outside standard hours. No daytime or night-time parking of lorries will be permitted outside agreed areas.
- shouting, loud radios or excessive revving of engines) by effective site management.
- Permitted working hours for the site work will normally be the following:
 - o 07:00 – 19:00 hours (Monday to Sunday) Vehicle movements and construction;
 - o 24/7 well tests

22. Neighbour Notification

The following neighbour notification procedures will be followed during the operational works:

Prior to work commencing, the Contractor will liaise with Local Environmental Officer in order to discuss their methods of working and measures planned to minimise disruption throughout the construction works; and

- The Contractor should appoint a responsible person to liaise with stakeholders in order to keep them informed of matters likely to affect them.
- Prior to site work commencing (at least one week before the works or a change in works), neighbours will be informed of:
 - o The start date;
 - o the duration and nature of the project;
 - o the principal stages of the project;
 - o possible impacts; and
 - o details of contact names and numbers of appropriate site personnel.
- The names and contact details of appropriate site personnel should be forwarded to Local Environmental Officer.

An example of a typical notification letter is presented below:

23. Draft Notification Letter (Example Only)



Angus Energy Plc Neighbour

Angus Energy Plc
Building 3 Chiswick Park
566 Chiswick High Street
Building 3 Chiswick Park
London
W4 5YA

18 June 2020

T: 0208 899 6380

Angus Energy Plc Programme – Balcombe, 2x Hydrocarbon

Angus Energy Plc is undertaking operations to pump out the leftover drilling fluids remaining in the well, and if the well shows oil following the removal of these drilling fluids, then the second stage would be to carry out the extended well test (EWT). If not, then the operation would likely cease at this point. All our work will be managed to minimise disruption to our neighbours and residents. We will continue to write to you with updates and hope you find the below information useful.

Extended Well testing works

Date and Time	Description of works
September 2019 – September 2022 Typically 08:00hrs – 18:00hrs Monday to Friday; and (Well testing will require 24-hour operation) Also Saturday 08:00hrs – 13:00hrs Saturday	<ul style="list-style-type: none">Phase 1: Pumping of drill fluids;

Whilst we do anticipate these works will create noise at times, we will do what we reasonably can in order to keep noise levels to a minimum. The local authority has been, and will continue to be, consulted through the Control of Pollution Act 1974 process regarding the implementation of the works.

We apologise for any inconvenience these essential works may cause and appreciate your patience. However, if you have any additional questions or concerns, please telephone us **on 0208 899 6380** and for more information about the Angus Energy Plc Programme please visit **www.angusenergy.co.uk**.

Yours faithfully

Head office

Angus Energy Plc

Appendix A: Plant Equipment List

Table A1 Adopted Sound Emission Levels Phase 1 – Pumping remaining drill fluids

Plant List: Stage 1 – Pumping remaining drill fluids							
Plant	Noise Data		On time (%)	No. of plant items	Screening (dB)	Total Correction (dB)	Total L _p (at 10 m) dB(A)
	Plant Ref	L _p (at 10m) dB(A)					
Surge Tank	Manufacturer data	80	100	1	0	0	80
Pipe work and manifold	Manufacturer data	80	100	1	0	0	80
Oil waste and storage Tanks	Manufacturer data	60	100	1	0	0	60
Linear Pump rod - Diesel generator	C4.79	64	100	1	0	0	64
Manufacturer data	Manufacturer data	60	100	1	0	0	60
Wheeled Mobile Crane	C4.80	70	100	1	0	0	70
Total							83

Table A2 Adopted Sound Emission Levels Phase 2 – Pad membrane

Plant List: Phase 2 – Pad membrane							
Plant	Noise Data		On time (%)	No. of plant items	Screening (dB)	Total Correction (dB)	Total L _p (at 10 m) dB(A)
	Plant Ref	L _p (at 10m) dB(A)					
Tracked excavator	C2.17	76	65	1	0	-2	74
Dumper	C4.4	76	45	1	0	-3	73
Roller	C2.38	73	30	1	0	-5	68
Lorry	C2.34	80	15	1	0	-8	72
Total							78

Table A3 Adopted Sound Emission Levels Phase 3 – Extended Well Test

Plant List: Phase 3 – Extended Well Test							
Plant	Noise Data		On time (%)	No. of plant items	Screening (dB)	Total Correction (dB)	Total L _p (at 10 m) dB(A)
	Plant Ref	L _p (at 10m) dB(A)					
Test Separator Unit	MAWP 1440 psig	80	100	1	0	0	80
Onboard data Acquisition system	Manufacturer data	50	100	1	0	0	50

Plant List: Phase 3 – Extended Well Test							
Plant	Noise Data		On time (%)	No. of plant items	Screening (dB)	Total Correction (dB)	Total L _p (at 10 m) dB(A)
	Plant Ref	L _p (at 10m) dB(A)					
Pipe work and manifold	Manufacturer data	80	100	1	0	0	80
Surface ESD System	Manufacturer data	80	100	1	0	0	80
Flare	1	80	100	1	0	0	80
Choke Manifold	Manufacturer data	80	100	1	0	0	80
Surge Tank	Manufacturer data	80	100	1	0	0	80
Oil waste and storage Tanks	Manufacturer data	60	100	1	0	0	60
Linear Pump rod - Diesel generator	C4.79	64	100	1	0	0	66
Vapour recovery Tank	Manufacturer data	60	100	1	0	0	60
Total							87

¹ Prediction of noise from industrial flares, C-C. Hantschk and E. Schorer (2008)

Table A4 Adopted Sound Emission Levels Phase Contingency 1 – Nitrogen Lift

Plant List: Phase 3 – Contingency 1 - Nitrogen Lift							
Plant	Noise Data		On time (%)	No. of plant items	Screening (dB)	Total Correction (dB)	Total L _p (at 10 m) dB(A)
	Plant Ref Type	L _p (at 10m) dB(A)					
Coiled Tubing unit	Manufacturer data	90	100	1	-10	-10	80
Nitrogen Converter	Manufacturer data	85	100	1	-10	-10	75
Nitrogen Tank	Manufacturer data	60	100	1	0	0	60
Total							81

Table A5 Adopted Sound Emission Levels Phase 3 Contingency 2 – Acid Wash with CT

Plant List: Phase 3 – Contingency 2 - Acid Wash with CT							
Plant	Noise Data		On time (%)	No. of plant items	Screening (dB)	Total Correction (dB)	Total L _p (at 10 m) dB(A)
	Plant Ref Type	L _p (at 10m) dB(A)					
Road Truck	C6.21	80	100	1	0	0	80
Total							80



Plant List: Phase 3 – Contingency 1 - Nitrogen Lift							
Plant	Noise Data		On time (%)	No. of plant items	Screening (dB)	Total Correction (dB)	Total L _p (at 10 m) dB(A)
	Plant Ref Type	L _p (at 10m) dB(A)					
Tracked excavator	C2.17	76	50	1	0	-3	73
Lorry	C2.34	80	25	1	0	-6	74
Breaker mounted on excavator	C1.9	74	15	1	0	-8	66
Concrete pump + concrete mixer truck	C4.25	82	20	1	0	-7	75
Total							79

Appendix B: Planning Conditions

Condition 13

The corrected noise level for operational noise from the site shall not exceed 55dB(A) $L_{Aeq,5 \text{ minutes}}$ (free-field) between the hours of 07:00 - 19:00 Mondays to Fridays and 08:00 - 13:00 Saturdays; shall not exceed Background $L_{A90,1 \text{ hour}} + 10\text{dBA}$ evenings (19:00-22:00) and weekends and shall not exceed 42dB(A) $L_{Aeq,5\text{-minutes}}$ free-field at night (22:00-07:00). Noise levels, which shall be continuously monitored and recorded, shall be determined at Kemps Farm.

- A 5dB correction shall be added to the L_{Aeq} noise level to provide a corrected noise level if one or more of the following features occur:
- the noise contains a distinguishable, discrete, continuous note (whine, hiss, screech, hum, etc.);
- the noise contains distinct impulses (bangs, clicks, clatters or thumps)
- the noise is irregular enough to attract attention.

Reason: In the interests of residential amenity.

Condition 14

Noise levels shall be continuously monitored at Kemps Farm from the date of the commencement of development. The results of the monitoring shall be submitted to the minerals Planning Authority on a weekly basis or on the request of the Minerals Planning Authority and shall include L_{A90} and L_{Aeq} noise levels, the prevailing weather conditions, details and calibration of the equipment used for measurement and comments on other sources of noise which affect the noise climate. If the results indicate that the noise levels exceed those set out in Condition 13 the mitigation detailed in Condition 15 shall be implemented within 48 hours.

Reason: To minimise the impact on residents and the environment.

Condition 15

Prior to the commencement of development, the applicant shall submit to, and have approved in writing by the Minerals Planning Authority a Noise Management Plan. The Plan shall identify:

- Details of initial noise tests for each item of noise-emitting plant on site to establish whether noise emissions are compliant with condition 13;
- If not compliant, details of what mitigation would be introduced and timescales for implementation;
- Details of instantaneous mitigation methods for each item of noise-emitting equipment (e.g. throttling back gas flow for the flare, stopping works where safe to do so) and any longer term mitigation;
- Detail of continuous monitoring procedure to monitor noise limits;
- Procedures for addressing any complaints received.

Once approved, the Noise Management Plan shall be implemented in full throughout the course of the development.

Reason: To minimise the impact on residents and the environment.