

# Noise Management Plan

## Site Details

**Site name:** Three Maids Anaerobic Digestion Plant  
**Site address:** Three Maids Farm, Three Maids Hill, Winchester, SO21 2QG  
**Operator name:** Acorn Bioenergy Operations Limited  
**Permit number:** EPR/FP3945QH

## Who this plan is for

- **Who should be made aware of this plan?**

All operational staff and relevant contractors.

- **How will they be made aware?**

Training and awareness for staff and contractors as part of training on the wider Environmental Management System.

The current version of the NMP will also be provided to the Environment Agency, customers and other interested stakeholders upon request.

## Document owner

**Document author:** Acorn Bioenergy Operations Limited

**Version number:** V1.0

## List of revisions

Revision number	Revision authorised by	Date submitted to Environment Agency	Revision owner
V1.0	Not applicable – first version	03/07/2024	NA

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# 1. Introduction

This Noise Management Plan (NMP) applies to the processes and activities to be undertaken by Acorn Bioenergy Operations Limited (ABL) (the Operator) at the Three Maids anaerobic digestion (AD) plant at Three Maids Farm, Three Maids Hill, Winchester, SO21 2QG (the site).

This version of the NMP has been written to support the environmental permit application for the proposed site, which requires a bespoke installation permit (Permit ref: EPR/BP3326SD/A001). It is a live document that will be updated accordingly throughout the construction, commissioning, operation and closure of the AD plant.

The NMP has been developed utilising the NMP template provided by the Environment Agency (EA) as part of pre-application advice.

The movement of vehicles to, from, and between the different areas of the site and the operation of fixed and mobile plant within the site can inevitably lead to the generation of noise. Effective operation and management are therefore required to minimise the noise emissions from routine operations and minimise the risk of abnormal operational conditions resulting in increased risk of noise generation at the site.

It is likely that any environmental permit issued for the site (Reference EPR/BP3326SD/A001) will contain the standard permit condition with respect to noise and vibration requiring:

*Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.*

Planning permission (reference 22/02037/FUL) for the site granted by Winchester City Council stipulates the following in Conditions 26 and 27.

*26. All plant/equipment installed shall always achieve sound power levels equal to or less than those specified in Table 6.2 of the Noise Impact Assessment Ref 404.11923.00004\_0004 (dated August 2022).*

*Reason: To protect the amenities of the occupiers of nearby properties.*

*27. The mitigation measures listed in Section 6.3 of the Noise Impact Assessment Reference 404.11923.00004\_0004 (dated August 2022) shall be installed prior to operation of the plant and shall be maintained at all times.*

*Reason: To protect the amenities of the occupiers of nearby properties.*

Whilst the site planning permission stipulates maximum noise levels at residential receptors, the EA is the primary regulator of noise as the site will be an EA regulated facility.

This NMP sets out the appropriate measures that the Operator will undertake to control noise emissions from the facility to ensure that noise emissions do not impact off-site receptors. The NMP will enable the Operator to assess and where possible prevent emissions of noise from the site that may result in annoyance and/or adverse environmental impacts.

## 1.1 Site description

The site is an AD installation site that will be processing approximately 94,000 tonnes per annum of feedstocks including energy crops primarily maize and wholecrop silage, straw and animal manures, supplied by local farms.

The site is 4.5 hectares (11 acres) in extent. The site, formerly farmland, sits within the northwest section of the intersection between the A34 dual carriageway and the A272. The site is located approximately 4 km north northwest of the city of Winchester.

The surrounding area is used principally for arable farming and grassland with pockets of protected Ancient Woodland. There is also a solar farm (120 m north of the site), an area used for muck-away, recycling and aggregates processing (150 m east), a pig farm (approximately 600 m northwest), and Harestock Wastewater Treatment Works (1.6 km south southeast). The site's gradient slopes in a north easterly direction towards the A34 from approximately 93.5m AOD to approximately 87.8m AOD.

The AD process involves a biological process that is continuous, therefore the processing plant will be operational 24/7 once it is constructed and commissioned. However, the normal operational hours for the site in terms of vehicle movements in and out of the site are 0700 to 1900, Monday to Sunday inclusive, thus avoiding night-time operations. The planning permission restricts deliveries or dispatch from the site to between 0700 and 2000 hours on any day. In addition to the above hours, during peak harvest times (for approximately 4 weeks a year) deliveries of crops to the site can take place from 0700 to 2200 to allow crops to be imported as they are harvested.

## 1.2 Maintenance and review of the NMP

The Noise Management Plan (**THR-OD-13**) is a live working document which forms part of the wider Environmental Management System (EMS) for the site. All controlled EMS documents are held within a cloud-based system with a hard copy on site. Documentation is controlled through an Integrated Management System document control system. The Site Manager holds responsibility for implementation of the NMP including training of relevant staff.

This NMP is a live document which will be reviewed annually or sooner if any of the following occur:

- if there have been noise complaints;
- if there are relevant changes to the site operations, infrastructure, or management.

Operational staff will be made aware of the NMP as part of their induction training and refresher toolbox talks will be provided by the Site Manager to operatives to ensure that all control measures are understood and implemented. Training will be logged within the Skills and Competency Matrix (**ABL-OD-02**).

ABL understands the importance of addressing both internal and external complaints in a prompt and comprehensive manner to resolve any issue as quickly as possible. All complaints are dealt with according to the Complaints Procedure (**ABL-SOP-02**). The Site Manager will be responsible for logging, investigating and following up on any noise complaints. See Section 5 Complaints Reporting.

The Site Manager will be responsible for ensuring that noise monitoring and any required corrective actions are completed. There will be a Daily Check (**THR-MP-04**) for the presence of abnormal noise within the site boundary which may indicate plant or equipment that needs to be inspected and maintained in addition to the planned preventative maintenance regime in place (See Section 4.2). In addition, there will be a Weekly Check for noise at off-site monitoring locations as detailed within

Section 4.3. This will be recorded in the Noise Monitoring Form (**THR-FT-02**). The ongoing frequency of off-site noise monitoring may be reduced if off-site noise impacts are unsubstantiated, and no complaints are received. Conversely, off-site monitoring frequency will be increased if off-site noise impacts are substantiated, noise complaints are received or there is ongoing abnormal on-site noise.

### **1.3 Relevant sector guidance on which this NMP is based**

The Noise Impact Assessment<sup>1</sup> which was carried out as part of the planning application for the site was undertaken using the methodology in 'Methods for rating and assessing industrial and commercial sound - BS 4142:2014+A1:2019'.<sup>2</sup>

This NMP has been written with reference to the notes within the template NMP provided and gov.uk guidance on Noise and vibration management: environmental permits.<sup>3</sup>

The noise control and mitigation measures in Section 4 of the NMP are informed by indicative Best Available Techniques as stated in the BREF document 'Best Available Techniques Reference Document for Waste Treatment'<sup>4</sup> to ensure that all relevant areas are included.

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<sup>1</sup> Noise Impact Assessment, Ref: 404.11923.00004\_0004, SLR Consulting, Version No:1, August 2022

<sup>2</sup> The British Standards Institution (2019). Methods for rating and assessing industrial and commercial sound (BS 4142:2014+A1: 2019)

<sup>3</sup> <https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits/noise-and-vibration-management-environmental-permits>

<sup>4</sup> Best Available Techniques (BAT) Reference Document for Waste Treatment, European IPPC Bureau, 2018

## 2. Receptors

### 2.1. Receptor List

*Table 2.1. Receptor list*

Receptor reference	Description	Land use e.g. house, school, hospital, commercial	Direction from site (north, south, east, west)	Approximate distance to site boundary (m)
R1	Proposed EVCS development including restaurant and playground	Commercial / Recreational	South	120
R2	The Pringle Group / Concrete 247	Aggregate / recycling	East	155
R3	Three Maids Bungalow	Residential	South west	250
R4	Lower Farm Cottages	Residential	West south west	530
R5	Worthy Down	Residential	North east	730
R6	Down Farm	Residential	South east	750
R7	Off Down Farm Lane (Static caravans)	Residential	South east	750
R8	Winchester Golf Academy	Recreational	South east	815
R9	Littleton Stud	Residential	South west	890
R10	Drovers Way	Residential	West south west	960
R11	Church Lane, St Catherines (Littleton)	Residential	South west	970
R12	Flowerdown Barracks	Residential / Recreational	South	1,120

These receptors are shown on the Human Receptors Location Plan (Appendix A- Site Plans).

## 3. Noise sources and processes

### 3.1 Noise impact assessment (NIA) conclusion

The executive summary of the NIA<sup>1</sup> for the site is replicated below:

*This report presents a noise impact assessment for a proposed anaerobic digestion (AD) facility at Three Maids Hill, Winchester, SO21 2QG (the Site).*

*A survey has been carried out to establish pre-development sound levels about the Site, including baseline sound levels representative of the nearest identified noise-sensitive receptors.*

*Noise emissions from the proposed development have been predicted using computer modelling techniques based on a preliminary plant selection and associated sound levels as agreed with the client. The assumptions in the noise model and sound data are conservative as to not under-predict the noise emissions; the assessment is generally considered to tend towards a worst-case. Mitigation has been included in the noise emissions predictions to include integral CHP stack silencers.*

*An assessment of impact has been formed following industry standard assessment methodology from BS 4142 and overarching national planning policy guidance. The results of the numerical and contextual components of the assessment methodology support the notion of a low impact development.*

*Following industry standard methodology and national planning policy guidance, it is concluded that noise from the proposed development would have a low impact in that it is not expected to cause any change in behaviour or attitude at the noise-sensitive receptors; that there would be no adverse impact on health or the quality of life.*

The conclusions of the NIA are as follows:

*The report has found that:*

- The numerical assessment during the daytime has concluded a negligible impact at the noise-sensitive receptors, where the emissions rating level resulting from the proposed development has been predicted to lie significantly below the representative background sound level, in the order of at least 12 dB below in the worst case.*
- The numerical assessment during the night-time has concluded a low impact at the noise-sensitive receptors, where the emissions rating level resulting from the proposed development has been predicted comparable to the representative background sound level in the worst case and 5 to 12 dB below the representative background sound level at the closest receptors.*
- The impact from the proposed development has been considered in context in accordance with BS 4142 guidance; the contextual considerations have been shown to support an assessment of a low impact development.*

*It is concluded that noise should not present reasonable grounds for planning refusal. The likely acoustic effects have been established about the NOAEL and LOAEL thresholds of the NPSE, such that noise is not expected to cause any change in behaviour or attitude. Mitigation has been included in the noise emissions predictions, to include proprietary plant equipment attenuation including CHP stack silencers.*

The meaning and context of these conclusions are explained in Section 7 of the NIA report:

*The evaluated noise impacts in this report should be considered by Winchester City Council mindful of the National Planning Policy Framework and Noise Policy Statement for England (NPSE), which currently define the policy and decision-making requirements for planning and noise.*

*The NPSE refers to established concepts from toxicology that are currently being applied to noise impacts and suggests that noise levels above the SOAEL\* should be avoided and that if noise levels fall between the LOAEL and SOAEL all reasonable steps should be taken to minimise and mitigate adverse effects while also considering the guiding principles of sustainable development. This does not mean that adverse effects cannot occur from a noise-generating development.*

*The range of noise impacts reviewed for the proposed development are deemed acceptable with respect to overarching requirements for planning and noise, where resulting impacts are anticipated around the 'no observed-adverse-effect level' NOAEL and the 'lowest-observed-adverse-effect level', (LOAEL) threshold of the NPSE.*

*It is expected that the sound resulting from the proposed development would be largely unnoticeable at the noise-sensitive receptors. The development may marginally affect the acoustic character of the area during the most sensitive periods of the evening and night-time of proposed operation, but not to the extent that there is a perceived change in quality of life.*

*In accordance with overarching planning requirements, measures have been satisfactorily considered to "mitigate and minimise adverse impacts on health and quality of life" which can be secured on the development by conditional approval, if necessary, to include:*

- *All reasonable mitigation of plant including using proprietary attenuation measures, suitable enclosures, and CHP stack silencers.*

*\* SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.*

Of particular note is the findings of the NIA in relation to the background noise levels which were surveyed:

*The character of the source sound has been considered unlikely to be distinguishable at the receptors based on the relatively low predicted rating level and a residual sound climate which is dominated by road traffic during the day and night-time periods.*

The sound power levels in dB with an A-weighting (shown as LwA) of the various Noise Sources on site are shown in Table 6-2 of the NIA. The most significant noise sources as predicted in the NIA are:

- Straw treatment building, conveyors (daytime only) (99 LwA)
- Biogas upgrading unit (BUU) and carbon dioxide (CO<sub>2</sub>) recovery unit (96 LwA)
- Heavy Good Vehicles (HGVs) entering and leaving the site (95 LwA); these movements will be within planning permission restricted hours only

The noise sources in this NMP have been revised from the NIA:

- There will not be Grid Entry Unit (the plant will operate a virtual pipeline transporting compressed gas to a hub site for grid injection).
- Only one digestate separator was included in the NIA however, there will be two.

Both these elements of plant (the addition and the omission) were designated a sound power level in dB of 93 LwA so these arguably cancel each other out.

In addition the separator building was included in the NIA as a noise source. However, there are no



additional sources of noise arising from the separator building other than the 2 No. separators and the mobile plant movements which have been accounted for under other noise sources.

The NIA considered one Pump container however, there will be two. However, the NIA considers two scrubber / blowers for the CentriAir abatement system when in reality there will be one.

Note: the NIA has considered all noise sources to be operating continuously and simultaneously for the proposed day and night-time plant operations, thereby tending toward a worst-case.

**Table 3.2 Description of noise emitting processes**

Noise source	Sound power level (dBA)	Sound pressure level (dBA)	Measurement distance (m)	Operational conditions	Additional comments
HGV (Site Entrance to Bays.)	95	75	10	Within planning permission restrictions.	NIA assumes- 2 loads (4 movements) per hour daytime. 1 movement per 15-minutes at night.)
2 No. CHPs					NIA states that 'The CHP has been confirmed by the client as operating with a sound level of 65 dB (A-weighted) at 10 m; the stack has been modelled as a point source at 9 m high and 1 m above the chimney height with a sound power level of 93dB(A)'.  <ul style="list-style-type: none"> <li>- Container</li> <li>- Container Stack End</li> <li>- Container Non-stack end</li> <li>- Cooling Fan</li> <li>- Stack</li> </ul>
- Container	84	64	10	24 hours/day	
- Container Stack End	82	62	10	24 hours/day	
- Container Non-stack end	79	59	10	24 hours/day	
- Cooling Fan	73	53	10	24 hours/day	
- Stack	93	73	10	24 hours/day	
Pumps for heat system	93	73	10	24 hours/day	NIA states 'The following fixed plant items have been given a sound pressure level of nominally 85 dB (A-weighted) at 1 m as a likely worst-case as confirmed by the client. Actual noise emissions from these items may be lower:  <ul style="list-style-type: none"> <li>• Pumps for heat system'</li> </ul>
2 No. Pumps rooms	94	74	10	24 hours/day	Only one considered in the NIA.
Chiller unit	93	73	10	24 hours/day	NIA states 'The following fixed plant items have been given a sound pressure level of nominally 85 dB (A-weighted) at 1 m as a likely worst-case as confirmed by the client. Actual noise emissions from these items may be lower:

Noise source	Sound power level (dBA)	Sound pressure level (dBA)	Measurement distance (m)	Operational conditions	Additional comments
					<ul style="list-style-type: none"> <li>Chilling unit'</li> </ul>
2 No. Biomethane compressors	90	70	10	24 hours/day	
Biogas upgrade unit (BUU) and CO <sub>2</sub> recovery unit	96	76	10	24 hours/day	
2 No. Digestate separators	93	73	10	24 hours/day	
Separation building	80	60	10	24 hours/day	There are no additional sources of noise arising from the separator building other than the 2 No. separators and the mobile plant movements which have been accounted for under other noise sources. This item has not been considered further.
Digester tank mixers	86	66	10	24 hours/day	<p>NIA states 'Motorised mixers in the model have been assumed as point noise sources external to the tank walls at high level. The final design may incorporate mixers located within a concrete roof, with reduced noise emissions'</p> <p>To confirm in the final design whilst there are 26 mixers in total, they are operated sequentially such that less than 20 (as per NIA) will actually be operational at any one time.</p>
Small tank mixers	86	66	10	24 hours/day	Small tank mixers predicted to produce less than 60dB so not included further as a noise source.
Straw treatment building (Bale breaker, Straw mill, Straw	99	79	10	12 hours/day	NIA states 'The process building construction has been assumed lightweight single ply metal'.

Noise source	Sound power level (dBA)	Sound pressure level (dBA)	Measurement distance (m)	Operational conditions	Additional comments
extruder and conveyors)					
Gas flare (Emergency use only)	83	63	10	0.25 hours/day	Emergency use only – not considered further.
Boiler (Emergency use only)	89	69	10	2 hours/day	Emergency use only – not considered further.
Blower/Scrubber (CentriAir abatement)	91	71	10	24 hours/day	2 No. considered in the NIA however there will only be one.
Mobile plant within site (Loaders)	90	70	10	Within operational hours	NIA assumes - 10 movements per hour (daytime only).

### 3.3 Overview of noise processes and emissions

See Appendix A Site Plans for Noise Emitting Layout which shows the site layout in relation to noise emitting processes including mobile noise emitting sources.

The process description is summarised below (a detailed description can be found within Section 5 of the EMS Manual **(THR-OD-01)**).

The feedstocks for the AD plant are energy crops primarily maize and wholecrop silage, straw and animal manures, supplied by local farms. The AD plant will treat around 94,000 tonnes per year of feedstock. During harvest time (7 weeks of the year) tractors and trailers will bring in energy crops into the site for storage in the silage clamps or Straw treatment building. All year round there will be HGV movements bringing in solid manures to the Manure reception building and slurry to the Liquid Feedstock Tank (400m<sup>3</sup>).

The solid manures are stored and loaded into a hopper using mobile plant within the dedicated Manure reception building fitted with bespoke emissions abatement plant. The waste feedstocks are macerated, screened, and mixed with recirculated digestate liquor and process water.

Crops are ensiled on site in two silage clamps. The straw is treated in a Straw treatment building; the process involves wetting and chopping. Non-waste feedstocks are fed into the process using mobile plant via two external feed hoppers; there is a dry feed system into the Primary digesters via an auger.

The digesters operate in the mesophilic temperature range at 38-45°C. There are two Primary digesters (PD1 & PD2) which operate in parallel. The two Primary digesters feed into the two Secondary digesters (SD1 & SD2). Both Secondary digesters feed into a single Tertiary digester (TD1). The Primary digesters each have an operational capacity of 5,840m<sup>3</sup>, the Secondary digesters and the Tertiary digester each have an operational capacity of 6,430m<sup>3</sup>.

Whole digestate from the Tertiary digester is then pasteurised in one of three 35m<sup>3</sup> batch pasteurising tanks. Each batch is heated to over 70°C for a minimum of one hour prior to being cooled via a heat exchanger and then being pumped to the Suspension buffer tank (400m<sup>3</sup>). Whole digestate from the Suspension buffer tank (400m<sup>3</sup>) is pumped to the 2 No. separators capable of separating up to 320 tonnes per day (t/d) whole digestate each housed within the Separator covered bunker.

Separated liquor is pumped from the separator to:

- the digestate storage bag with working capacity of 7,344m<sup>3</sup>
- the Process water buffer tank (100m<sup>3</sup>) which feeds the premix system for the manure and the premix systems on the primary digesters.

The fibre collects in the Separator covered bunker below the separators. Both the separated liquor and fibre digestate are used as a biofertiliser on nearby farms. Digestate is removed from site either to on farm storage locations or delivered to be spread directly to land for agricultural benefit to meet crop need.

The biogas will be upgraded into biomethane which will be transported offsite for injection at a central gas to grid injection point. In addition, carbon dioxide (CO<sub>2</sub>) from the biogas will be captured and upgraded to 99.9% purity. The treated CO<sub>2</sub> is suitable for almost all industrial and commercial applications in the UK. Upgraded CO<sub>2</sub> would be liquefied and transported by road to end users.

There are 2 No. 1.2 MW combined heat and power engines (CHPs); one of which will burn biogas and the other natural gas to produce heat and electricity. Heat from the CHPs is used to maintain the temperature of the digesters and to provide heat to the pasteurisers.

There is also a dual fuel emergency boiler (550 kW) which can burn biogas or biomethane (or natural gas) to provide heat for the AD process, if one or more of the CHPs is non-operational. There is an emergency flare in place to burn excess biogas during abnormal operations.

The site layout is such that the nearest sensitive receptors are located further away from potentially noisy equipment such as the CHPs and flare than other parts of the site e.g., the silage clamps which will not be noisy, except during loading of clamps at harvest times.

## 4. Control measures and process monitoring

### 4.1 Appropriate measures / Best available techniques (BAT)

*Table 4.1 Actions and procedures which will be in place to achieve appropriate measures / best available techniques (BAT)*

Activity which produces noise	Operational Hours / days	Control measures (Appropriate Measure / BAT)	Contribution to overall impact	Action taken if outside optimum process parameters
HGV movements	Plant operational hours between the hours of 0800 and 1800 hrs Monday to Friday and 0800 and 1300 hrs Saturday and at no time on Sundays or recognised public holidays.	Vehicles are restricted to 10 miles per hour on site as a health and safety measure; this also reduces potential noise emissions.	High	Operational hours can be controlled but the noise emissions from third party vehicles are not under the operators direct control.
2 No CHPs	24 hours	The CHPs will be provided with acoustic enclosures. Stack silencer will be fitted to both CHP stacks as per assumed mitigation in NIA. The CHPs are away from the nearest noise sensitive receptors as part of the site design layout.	Medium	Further mitigation measures will be considered in accordance with BAT if the operational CHPs are found to contribute to off-site noise impacts at noise sensitive receptors.
Pumps for heat system	24 hours	Planned preventative inspection and maintenance and daily checks.	Medium	No further control measures proposed.

Activity which produces noise	Operational Hours / days	Control measures (Appropriate Measure / BAT)	Contribution to overall impact	Action taken if outside optimum process parameters
2 No Pump rooms	24 hours	Pumps within containers which attenuate noise.  Planned preventative inspection and maintenance and daily checks.	Medium	No further control measures proposed.
Chiller unit	24 hours	Planned preventative inspection and maintenance and daily checks.	Medium	No further control measures proposed.
Biomethane upgrade unit (BUU) and CO <sub>2</sub> recovery unit	24 hours	The BUU will have an acoustic enclosure.  Planned preventative inspection and maintenance and daily checks.	High	Further mitigation measures will be considered in accordance with BAT if the operational BUU and / or the CO <sub>2</sub> recovery unit are found to contribute to off-site noise impacts at noise sensitive receptors.
2 No. Biomethane compressors	24 hours	The biomethane compressors will have acoustic enclosures.  Planned preventative inspection and maintenance and daily checks.	Low	No further control measures proposed.



Activity which produces noise	Operational Hours / days	Control measures (Appropriate Measure / BAT)	Contribution to overall impact	Action taken if outside optimum process parameters
2 No. Digestate separators	24 hours	Planned preventative inspection and maintenance and daily checks.	Low	No further control measures proposed.
2 No. Primary digesters (7 No. Vertical paddle mixers on each digester).	16 hours a day	Planned preventative inspection and maintenance and daily checks	Low	No further control measures proposed.
2 No. Secondary digester & 1 No Tertiary digester ( 4 No. Horizontal shaft agitators in each tank)	50% of time	Planned preventative inspection and maintenance and daily checks	Low	No further control measures proposed.
Straw process building (Bale breaker, Straw mill, Straw extruder and conveyors)	Day time operations only.	Straw treatment activities are carried out within the dedicated building and within day time working hours.  Planned preventative inspection and maintenance and daily checks of all fixed plant in the building.	High	Further mitigation measures will be considered in accordance with BAT if the operational fixed plant is found to contribute to off-site noise impacts at noise sensitive receptors.
Odour abatement scrubber	24 hours	Planned preventative inspection and	Medium	No further control measures proposed.

Activity which produces noise	Operational Hours / days	Control measures (Appropriate Measure / BAT)	Contribution to overall impact	Action taken if outside optimum process parameters
		maintenance and daily checks.		
Mobile plant – front loaders moving feedstocks around site	Operational hours restricted in accordance with planning permission	<p>Vehicles are restricted to 10 miles per hour on site as a health and safety measure; this also reduces potential noise emissions.</p> <p>Use of less intrusive alarms, such as broadband vehicle reversing warnings.</p> <p>Planned preventative inspection and maintenance and daily checks.</p> <p>Plant will be switched off when not in use.</p>	Medium	No further control measures proposed

## 4.2 Onsite monitoring procedures

**Table 4.2 Description of onsite processes which will ensure impacts do not increase on site.**

Description of procedure	Procedure	When will this be carried out?	Corrective action
Staff training	Training of site personnel to raise awareness of noise at nearby sensitive receptors and the control measures within the current NMP	Periodic training for all staff and induction training for new starters	Training provision will be reviewed if it is identified that it can be improved to maximise control of noise emissions.
Good practice on site	All vehicles and plant will be switched off when not in use. Use of less intrusive alarms, such as broadband vehicle reversing warnings. Plant items that comply with the relevant UK noise limits applicable to that equipment will be used.	Continuously as part of the NMP	Periodic training
Safety checks	Site Operatives are required to undertake checks as part of operating procedures e.g., checking that feeding systems and pumps are operating correctly.	Before the start of each shift	Should a noticeable increase in noise occur during a shift, the Site Operative is required to report it to the Site Manager.
Visual checks	Site Operatives are required to undertake checks as part of operating procedures	Before the start of each shift	Should a noticeable increase in noise occur during a shift, the Site Operative is required to report it to the Site Manager.
Maintenance, servicing and repair	Plant will be operated and maintained appropriately, having regard to the manufacturer's written recommendations or using other appropriate operation and	As prescribed by the manufacturer and in accordance with planned preventative maintenance schedules	Should a noticeable increase in noise occur during a shift, the Site Operative is required to report it to the Site Manager.

Description of procedure	Procedure	When will this be carried out?	Corrective action
	maintenance programmes which reduce noise emissions		Following the report of increased noise, further investigation of the plant item will be undertaken to establish the cause of the increased noise emission and identify a suitable solution.
Process monitoring / plant efficiency	Mixers and pumps to be operated under controlled and steady state conditions	Continuously	Supervisory Control and Data Acquisition (SCADA) is programmed to perform certain control decisions based on data collected – control functions could include turning mixers on/off, adjusting temperature and regulating a variety of processes including feed rate.

### 4.3 Monitoring off site sound levels

Quantitative off-site monitoring is not currently proposed. A robust NIA was provided with the planning and permitting applications which concluded:

*'Following industry standard methodology and national planning policy guidance, it is concluded that noise from the proposed development would have a low impact in that it is not expected to cause any change in behaviour or attitude at the noise-sensitive receptors; that there would be no adverse impact on health or the quality of life.'*

The applicability of BAT 17<sup>4</sup> 'In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system' is restricted to cases where a noise or vibration nuisance at sensitive receptors is expected and/or has been substantiated.

However, qualitative off-site noise monitoring will be carried out initially as a weekly check. The three off-site monitoring locations used for the development of the NIA representative of the nearest noise-sensitive receptors will be used in addition to one flexible downwind location to be determined at the time of the survey.

The results of this monitoring will be recorded in the Noise Monitoring Form (**THR-FT-02**). The ongoing frequency of off-site noise monitoring may be reduced if off-site noise impacts are unsubstantiated and no complaints are received. Conversely, the off-site monitoring frequency will be increased if off-site noise impacts are substantiated, noise complaints are received or there is ongoing abnormal on-site noise.

**Figure 4.1 – plan showing locations of sound level measurement positions used to monitor sound from the site (Figure 5-2 of the Noise Impact Assessment, SLR Consulting<sup>1</sup>)**



If off-site monitoring detects noise emissions that are attributable to on-site activity:

- If the source of off-site noise can be ascertained then any reasonable short term mitigation measures will be undertaken and then on-site and off-site noise levels reassessed.
- If there is still detectable off-site noise attributable to the site operations then a quantitative noise survey proposal scope will be agreed with the EA.
- The survey will be carried out within agreed parameters by a competent person who is either a full member of the Institute of Acoustics (IOA) or has successfully completed the IOA certificate of competence in environmental noise course.
- Further mitigation measures in line with Best Available Techniques will be considered and implemented as appropriate. The NMP will be revised and the updated version shared with the EA.

## 5. Complaints Reporting

The site will benefit from a sign at the site entrance which will provide the following information to members of the public:

- Site name and permit number
- Environment Agency contact details (including the 24 hour Incident Hotline Number)
- Duty Site Manager contact details

All complaints are handled in accordance with the Complaints Procedure (**ABL-SOP-02**). In accordance with the Complaints Procedure:

All staff are responsible for reporting all complaints to the Site Manager as soon as possible.

In the case of all complaints from any source, the Site Manager is responsible for:

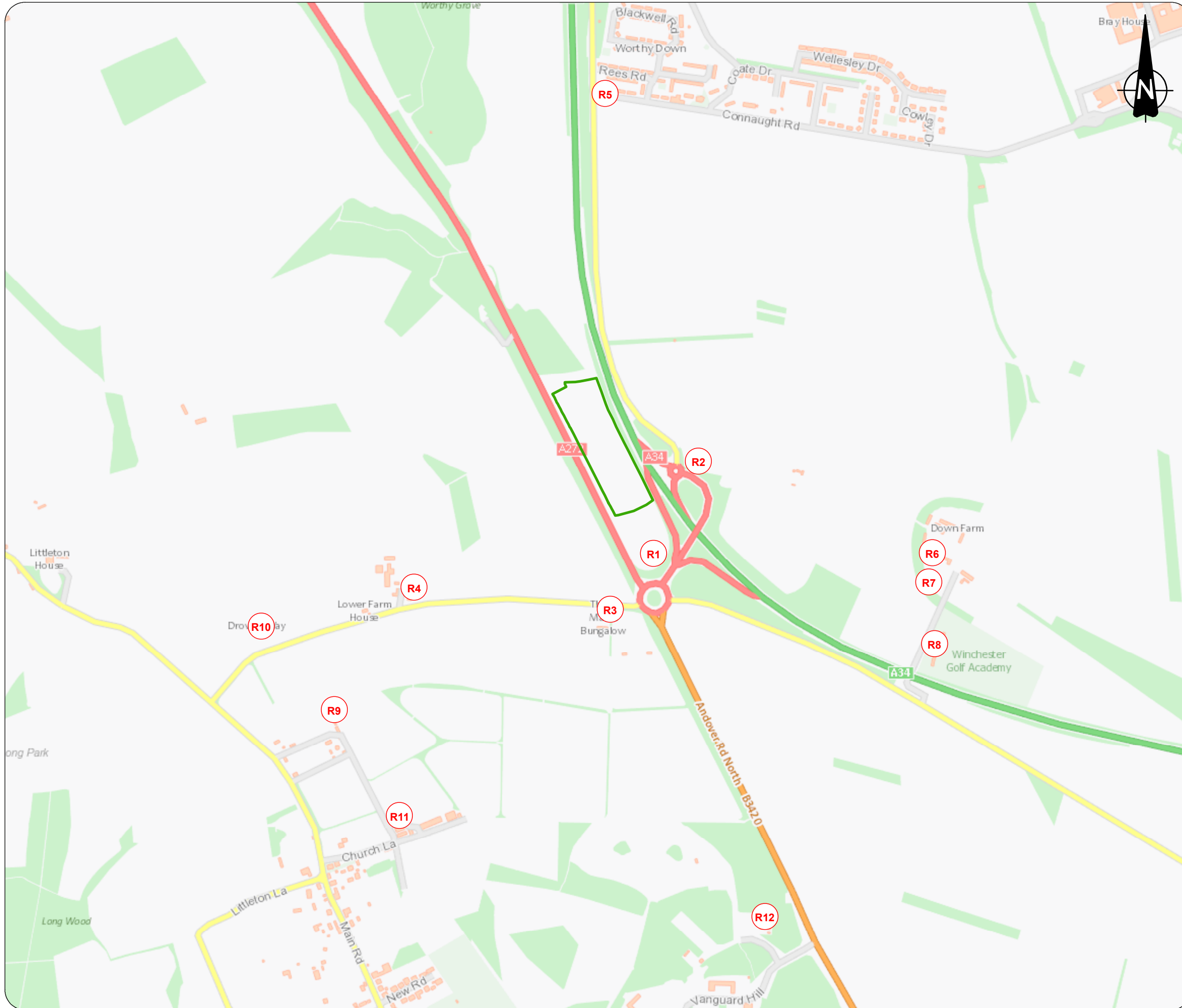
- Contacting the complainant to find out the circumstances of the complaint.
- Carrying out an assessment of site activities and weather (if applicable).
- Implementing actions to rectify or prevent recurrence. In the case of odour complaints, the site-specific Odour Management Plan must be followed. In the case of noise complaints, the site-specific Noise Management Plan must be followed.
- Recording the complaint and investigation on the Complaint Form (**ABL-FT-07**)
- Ensuring that feedback is provided to the complainant and that all relevant members of staff are made aware of the complaint and the action/changes taken to address it.
- If there is a substantiated complaint of pollution including dust, odour or noise then the EA must be informed as soon as practicably possible and within 24 hours.
- Notifying the Operations Director and the Health, Safety, Environment & Quality Manager.

## **Appendix A – Site Plans**

Human Receptors Location Plan, Earthcare Technical Limited (Drawing number: ETL724/THRM/HumanReceptors/EPR02)

Noise Emitting Layout, GGP Consult Limited (Drawing number 29348/204)





REVISIONS					
REV	DATE	DESCRIPTION	DWN	CHK	APP
-	2002 2024	First Issue	JJ	MF	MF

**LEGEND**

- Permit Boundary
- R Human Receptors

Scale at A3: 1:10,000

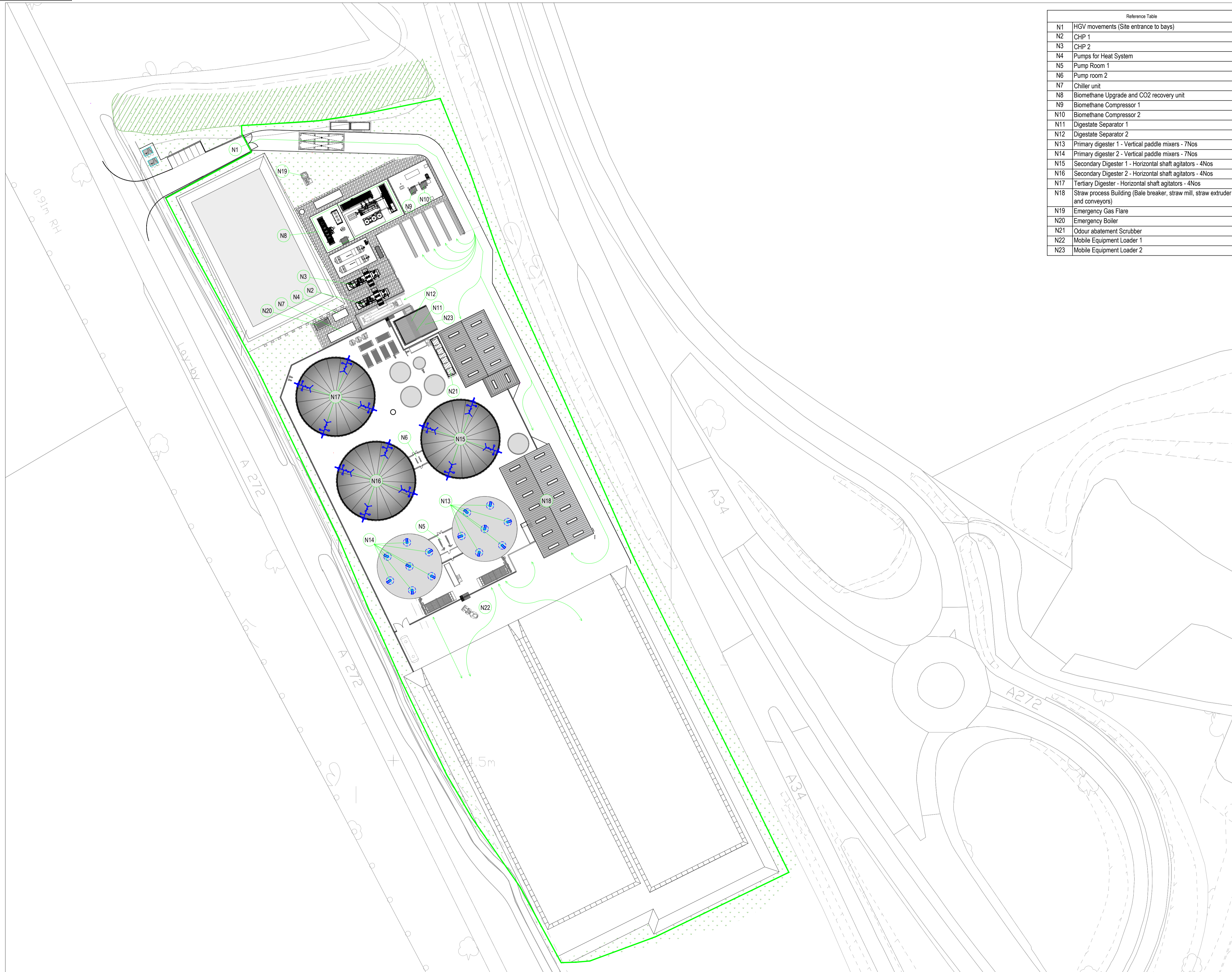
<b>Client</b> Acorn Bioenergy Operations Limited
<b>Project</b> Three Maids AD Permit Application
<b>Title</b> Human Receptor Locations Plan

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Drawn JJ	Checked MF	Approved MF	Revision
Date February 2024	Scale 1:10,000	Sheet Size A3	
Drawing Number ETL724/THRM/HumanReceptors/EPR02		File Reference ETL274.mxd	



Reference Table	
N1	HGV movements (Site entrance to bays)
N2	CHP 1
N3	CHP 2
N4	Pumps for Heat System
N5	Pump Room 1
N6	Pump room 2
N7	Chiller unit
N8	Biomethane Upgrade and CO2 recovery unit
N9	Biomethane Compressor 1
N10	Biomethane Compressor 2
N11	Digestate Separator 1
N12	Digestate Separator 2
N13	Primary digester 1 - Vertical paddle mixers - 7Nos
N14	Primary digester 2 - Vertical paddle mixers - 7Nos
N15	Secondary Digester 1 - Horizontal shaft agitators - 4Nos
N16	Secondary Digester 2 - Horizontal shaft agitators - 4Nos
N17	Tertiary Digester - Horizontal shaft agitators - 4Nos
N18	Straw process Building (Bale breaker, straw mill, straw extruder and conveyors)
N19	Emergency Gas Flare
N20	Emergency Boiler
N21	Odour abatement Scrubber
N22	Mobile Equipment Loader 1
N23	Mobile Equipment Loader 2

NOTES:-

- Perimeter Fence
- Permitted Area Boundary (4.453ha)
- 15m Woodland Easement



B	02/07/24	Issued For Information	SLC	JHC
A	26/06/24	Issued For Approval	SLC	JHC
Rev	Date	Description	DR	CH

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Client



Job Title

AD Plant.  
Three Maids

Drawing Title

Noise Emitting Layout

Status

Approval

Scale

As Shown

Date

Jan '24

Drawn By

*SLC*

Checked

JHC

Approved

JHC

Dwg. No.

29348/204

Rev

B