

Marchwood Parish Council

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11th July 2017

To: Members of the Planning Committee, remainder of Council for information.

Dear Councillor

A meeting of the Planning Committee will be held in the Pine Room, Marchwood Village Hall, on Monday 17th July 2017 at 7.00pm, you are summoned to attend.

Yours sincerely

Clerk to the Council

AGENDA

1. **Apologies for absence**
2. **Public participation** - may speak for up to three minutes.
3. **Declarations of Interest**
4. **Chairman's report**
5. **Planning applications**
16/11407 & 16/11408 – Unit 2c (N) North Road, Marchwood Industrial Park: Biodiesel fuelled Flexible Generation Facility (Facility A & Facility B); associated infrastructure and alterations.

Members of the public are welcome to attend meetings of the Parish Council. Copies of items referred to in the agenda are available from the Parish Council office on request.

**Planning Applications 16/11407 and 16/11408,
Unit 2C (N) North Road, Marchwood Industrial Park, Marchwood**

Discharge of Condition 7 – Air Quality Mitigation Strategy

Context

There is currently no specific emission guidance from DEFRA relating to the impact on air quality for processes, which are only operational for a limited period of the year and/or operate only for short periods of time. This situation may change under the forthcoming Medium Combustion Plan Directive, but for now the current lack of guidance makes it difficult to assess what level of emissions are acceptable.

The air quality assessment submitted with the planning applications showed that running the facilities together using conventional 'red' diesel for up to 300 hours per annum for each facility would not exceed current European Air Quality Objectives. The applicant subsequently committed to running the facilities on Green B+, a biofuel that further reduces NO_x emissions.

Proposed Planning Conditions (Conditions 7 & 8)

Subject to the granting of conditional planning permission the Council proposes to control emissions from the proposed developments through the imposition of planning conditions (7 & 8), which were set out in the planning officer's report to committee of 8th March 2017. Condition 7 requires the submission and approval of a scheme of mitigation and Condition 8 requires the submission and approval of a scheme for monitoring of emissions of oxides of nitrogen (NO_x).

This document provides details of the proposed mitigation strategy to address the requirements of condition 7 for both planning applications (16/11407 and 16/11408), as below:

"Prior to works commencing on the site, the operator shall submit to the Local Planning Authority for its written approval a scheme for the mitigation of nitrogen oxide (NO_x) emissions, using available technology so as to obtain a reduction in emissions of at least 50% compared to the unabated NO_x emissions when using biodiesel (Green B+ or equivalent) as a fuel type. Development shall not take place until the mitigation scheme has been approved by the Local Planning Authority, and the facility shall only start to operate once the approved mitigation measures have been provided. These approved mitigation measures shall thereafter be permanently retained throughout the operational lifetime of the development."

Note that Condition 8 requires monitoring of the actual environmental performance of the facilities. The details of the proposed monitoring strategy are set out in a separate document, submitted to discharge the requirements of condition 8 for both applications.

Discussion on Conditions 7 & 8

At the Planning Development Control Committee meeting on 8th March 2017, a number of councillors raised concerns about the effect of any air quality degradation at sensitive receptors. Condition 7 directs the applicant to provide a plan to reduce the intensity of emissions from the source (the engine exhaust vents on site). Monitoring under condition 8 will ensure that the environmental performance is maintained.

The Green B+ fuel continues to be developed. At this stage, the actual performance of the fuel proposed to be used in the gensets at both facilities is expected to fall in the range of a 30-80% improvement over a 'regular' (e.g. red diesel) fuel. The original modelling study submitted with the planning applications assumed a conservative 30% reduction in the supplier's stated NO_x emissions by switching from regular diesel to Green B+ biofuel. However, should the actual performance of the fuel in the engines be towards the upper end of the 30 to 80% range, then the results from modelling indicate that Condition 7 might be satisfied by fuel selection alone and without installation of any abatement technology.

Emission Target Under Condition 7

Under Condition 7, the target emissions have been set by the Council at 50% of the emissions produced by the proposed engines in the planning applications using Green B+ fuel. As noted above this may be achieved by switching to biofuel as the fuel source or a combination of biofuel and

abatement mitigation technology. However, the 50% target sets the benchmark for the mitigation strategy. To quantify the target – for the proposes of monitoring at the exhaust vents (consisting of 4 engines per vent) – our calculation, based on the engine manufacturers technical specification, is set out below:

MTU560 Manufacturer's stated emission of 2.0 g/s – 30% from Green B+ = 1.4 g/s

Condition 7 requires a further 50% reduction of the post Green B+ biofuel emissions
= $1.4/2 = 0.7$ g/s per vent

0.7g/s is therefore the NO_x reduction target for the emissions monitoring scheme

Achieving the Condition 7 Target

The applicant understands the concerns raised about the possible localised and short term impacts when the plant is operational. Although not obliged to install abatement technology, as a good neighbour, the applicant is willing to agree and implement a scheme of mitigation to achieve and exceed the emissions reduction target specified by New Forest District Council's Environmental Health Officer.

Whilst this may be achieved by choice of fuel alone, the applicant also commits to installing (where proved to be necessary) Selective Catalytic Reduction (SCR) technology or equivalent, and will also accept a condition restricting each plant to a maximum of 300 hours operation per annum. Therefore, the scheme to achieve the target emissions at source will fall broadly into three steps:

- *Step One – Restriction on Operating Hours for Each Facility*
The air quality assessment submitted with the planning applications concludes that if the facilities are only operated for 300 hours per year each then EU¹ and UK² Air Quality Standards and Objectives would not be exceeded and, as a consequence, the impact on local air quality would not be significant.

It is worth noting that based on plant the applicant operates elsewhere, the actual hours are likely to be much less than 300 hours of operation.

- *Step Two – Use of an Enhanced Green D+ Fuel*
This fuel is based on a unique Renewable Diesel or HVO produced by NESTE using a hydrotreating process and its performance potentially exceeds that of the previously proposed Green B+ fuel.

The raw materials for the Green D+ fuel come from waste animal fat, waste fish oil and camelina, jatropha, soybean and rapeseed oils. The fuel is blended with a patented British Cerium Oxide Nano Technology based performance additive that changes the way fuel burns in the engine, such that emissions are reduced.

This fuel currently attracts Renewable Obligation Certificates (ROCs) and, as such, is deemed a renewable energy source by the UK Government.

- *Step Three – Application of Specific Abatement Measures*
By applying specific pollution abatement measures – such as Urea treatments or SCR – can further minimise NO_x emissions and thereby minimise impact on local air quality.

Finally, under Condition 8, emissions monitoring will be undertaken on a representative number of engine exhausts, in conjunction with additional ambient air quality monitoring at nearby sensitive receptors, to quantify the impact on local air quality of the operation of the facility, and to demonstrate that the results from detailed modelling were reliable and can be achieved in practice.

¹ DIRECTIVE 2008/50/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 May 2008 on ambient air quality and cleaner air for Europe

² Statutory Instrument 2010 No. 1001. ENVIRONMENTAL PROTECTION. The Air Quality Standards Regulations 2010

Implementation Programme

The applicant proposes the following steps to achieve or surpass the target NO_x reduction of 50%.

Mitigation Action	Rationale	Target
Action 1 Measure actual emissions using the enhanced Green D+ fuel	The fuel improves the emissions performance of any engine	Tests suggest that a 30-80% reduction is achievable, depending on operational parameters
Action 2 Test a system being developed by Simec in the UK that adds water to the Green D+ fuel to further reduce NO _x .	Simec is using Green D+ to produce the UK's first Green Steel (recycled steel using green fuels) and who have had success in reducing NO _x further by using emulsified fuel.	Tests suggest that further NO _x reduction is achievable over 'neat' fuel.
Action 3 Apply SCR and other physical measures to the engines to guarantee the 50% target	There are a number of technologies – both pre- and post-combustion – that can be deployed to achieve the target.	Fulfilment of the Condition 7 target of 0.7 g/s

Programme for Action 1

Task	Objective	Proposed Timescale
Agree the scope of an emissions monitoring programme to quantify NO _x emissions from a representative number of engine exhausts.	Create the basis to confirm the actual reduction of NO _x as a result of all mitigation steps.	Prior to commissioning
Run five test cycles of both facilities (with National Grid's agreement) that simulate the typical short run operating regime of the facility using the Green D+ fuel. These cycles will be 2x1 hour of running and 3x2 hours of running between 5pm and 7pm on each weekday evening. Both facilities will be run at the same time to simulate the worst-case scenario.	Measure the benefits from using the Green D+ diesel fuel through vent monitoring	One week.
Determine and assess the actual reduction	To determine if the condition has been met using Green D+ fuel alone	On-going during the week of tests

Programme for Action 2

Note that Action 2 is only undertaken if Action 1 fails to produce the target reduction in emissions as the long-term effect on the engines is being proven.

Task	Objective	Proposed Timescale
Implement a fuel dosing system that adds water to the Green D+ fuel to increase the surface area for combustion within the chamber.	To reduce the intensity emissions from the engines at the monitoring points	Two weeks

The improved combustion reduces the production of NO _x		
<p>Run five test cycles of both facilities (with National Grid's agreement) that simulate the typical short run operating regime of the facility using the Green D+ fuel.</p> <p>These cycles will be 2x1 hour of running and 3x2 hours of running between 5pm and 7pm on each weekday evening.</p> <p>Both facilities will be run at the same time.</p>	Measure the benefit achieved by altering the configuration of the engines through vent monitoring	One week.
Determine and assess the actual reduction	To determine if the condition has been met	On-going during the week of tests

Programme for Action 3

Note that Action 3 is only undertaken if Actions 1 and 2 fail to produce the target reduction in emissions.

Task	Objective	Proposed Timescale
<p>Implement a SCR system comprising of a physical catalyst and a Urea/AdBlu reducing agent that is injected into the exhaust gases to create Ammonia (NH₃).</p> <p>The volume is controlled (as in cars) according to the load on the engine and the flow (speed) of exhaust gases.</p> <p>The reaction reduces NO_x through a catalysed reaction that converts NO_x, NH₃ and free Oxygen to Nitrogen (N₂) and water vapour (H₂O)</p>	To reduce the intensity emissions from the engines at the monitoring points	Two months (estimated)
<p>Run five test cycles of both facilities (with National Grid's agreement) that simulate the typical short run operating regime of the facility using the Green D+ fuel.</p> <p>These cycles will be 2x1 hour of running and 3x2 hours of running between 5pm and 7pm on each weekday evening.</p> <p>Both facilities will be run at the same time.</p>	Measure the benefit achieved by altering the configuration of the engines through vent monitoring	One week.

Determine and assess the actual reduction	To determine if the condition has been met	On-going during the week of tests
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Summary Points

This document has been produced in consultation and liaison with New Forest District Council's Environmental Health Officer.

We anticipate that the enhanced Green D+ fuel will achieve the required outcomes, either directly or when emulsified.

The monitoring at each action level will provide immediate results, so the appropriate action can be decided upon in a timely manner.

In the event that SCR needs to be fitted, this will need to be done to the required number combined exhaust vents to achieve the emissions reduction requirements of condition 7 (there being 24 vents comprising 96 engines with groups of 4 linking into one single vent, for exit from the building).

At this stage, the period of 2 months to fit SCR abatement technology to those stacks is an estimate which would need to be confirmed and agreed in consultation with the Council at the relevant time. However, while the technology was being fitted, the facilities would not run and the facilities will not be operated commercially until the emission level (0.7g/s per monitored vent) is obtained.

23 June 2017

**Planning Applications 16/11407 and 16/11408, Unit 2C (N)
North Road, Marchwood Industrial Park, Marchwood**

Discharge of Condition 8 – Air Quality Monitoring Strategy

Context

There is currently no specific emission guidance from DEFRA relating to the impact on air quality for processes, which are only operational for a limited period of the year and/or operate only for short periods of time. This situation may change under the forthcoming Medium Combustion Plan Directive, but for now the current lack of guidance makes it difficult to assess what level of emissions are acceptable.

The air quality assessment submitted with the planning applications showed that running the facilities together using conventional 'red' diesel for up to 300 hours per annum for each facility would not exceed current European¹ and UK² Air Quality Standards and Objectives. The applicant subsequently committed to running the facilities on Green B+, a biofuel that further reduces NO_x emissions.

The proposed (combined) development incorporates ninety-six engine generators, with emissions from groups of four engines combined into twenty four common exhausts on the southern façade of the building.

Proposed Planning Conditions (Conditions 7 & 8)

Subject to the granting of conditional planning permission the Council proposes to control emissions from the proposed developments through the imposition of planning conditions (7&8), which were set out in the planning officer's report to committee of 8th March 2017. Condition 8 requires the submission and approval of a scheme for monitoring emissions of oxides of nitrogen from the facility.

This document provides details of the proposed mitigation strategy to address the requirements of condition 8 for both planning applications (16/11407 and 16/11408), as below:

"Prior to works commencing on the site, a scheme for the monitoring of nitrogen oxide (NO_x) emissions from both the facility hereby approved and the facility approved under planning permission 16/11408, shall be submitted to and approved in writing by the Local Planning Authority. The scheme to be approved shall include an agreed limit value based on the mitigated nitrogen oxide (NO_x) emissions, measures to be undertaken if the emission limit is exceeded, and a monitoring schedule which shall include, as a minimum, monitoring on commissioning of the Facilities and every 3 years thereafter during the operation of the Facilities."

Note that Condition 7 requires the achievement of a defined reduction in the intensity of the emissions from the facilities. The details of the proposed approach are set out in a separate document, submitted to discharge the requirements of condition 7 for both applications.

Achieving Condition 8

The applicant for both planning applications, Plutus Energy Limited (PEL), has discussed with New Forest District Council's Environmental Health Officer, the requirements for monitoring of emissions of oxides of nitrogen (NO_x) from the engines associated with the combined Flexible Generation Facilities (FGF).

It was agreed that a representative number of engines should be included in the emissions monitoring programme at the stack output. This was proposed in discussions to be 25%. As 4 engines exit into each stack and there are 24 stacks (12 per facility), this equates to monitoring of 3 stacks for each facility (6 in total).

PEL will commission a MCERTS-accredited company to undertake an independent assessment of NO_x emissions from three of the combined exhaust vents of both facilities. MCERTS-accredited

¹ DIRECTIVE 2008/50/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 May 2008 on ambient air quality and cleaner air for Europe

² Statutory Instrument 2010 No. 1001. ENVIRONMENTAL PROTECTION. The Air Quality Standards Regulations 2010

monitoring techniques will be applied to quantify emissions of oxides of nitrogen (NO_x) during the proposed test cycles when the Green D+ biodiesel fuel, and if required, the SCR systems will be operational. These cycles will be 2x1 hour of running and 3x2 hours of running between 5pm and 7pm on each weekday evening to simulate the likely pattern of running.

Measurements will be undertaken in line with the requirements of BS EN 14792:2005. This is the reference method for the determination of the mass concentration of nitrogen oxides (NO_x) from stationary source emissions, and is based upon the chemiluminescence reference method. Sampling ports will be fitted to all engine exhausts in line with the requirements of Environment Agency Technical Guidance Note (Monitoring) M1³. The timing of the emissions monitoring programmes will be agreed in advance with New Forest District Council's Environmental Health Officer, and the results will be made available within four weeks of completion of the test programme.

Once the baseline operating conditions have been established, PEL proposes to operate a Continuous Emissions Monitoring (CEM) Scheme using the installed equipment that created the baseline. This equipment will be regularly calibrated by an independent approved operator. The CEM Scheme will continue until the target has been demonstrated to the satisfaction of the New Forest District Council's Environmental Health Officer. Once NFDC is satisfied, PEL will move to a periodic assessment by securing an independent expert report every three years thereafter to demonstrate continued compliance, unless otherwise agreed with the Council.

During the CEM period, each vent will be monitored equally by rotating the measurement regularly across all vents. In any one year, each vent will be monitored for a total of 4 months in each facility (3 vents monitored at a time across 12 vents per facility equals each vent monitored for a total of 4 months). During the TRIAD period of November to February (while it still exists), the monitoring equipment will be moved monthly to ensure that each vent is monitored for an equal period of time during those months (in total one month each).

As the CEM will be to the same standard as the baseline, using the same equipment and rotations across vents and locations, NFDC and PEL will be able to build up a detailed picture of the actual environmental performance of the facilities.

In addition, PEL will monitor the operational performance of each engine individually, based on data recorded by the engine management systems. The engines will be equipped with fail safe devices that will shut down an engine if it's management system detects any abnormal operating condition that could give rise to an unacceptable impact on local air quality.

Finally, PEL will make this data available to NFDC monthly in a form to be agreed.

Monitoring Receptors in The Community

Outwith the specific requirements of condition 8, and in response to concerns raised by Councillors about air quality impacts on the local community, PEL will voluntarily undertake ambient air quality monitoring to establish the existing background in the vicinity of the FGFs development site, and to assess the impact on local air quality of emissions associated with the FGFs when commissioned and operational. This will provide an additional safeguard to the community.

This monitoring will be conducted by an independent contractor and preliminary discussions are underway with TRL, who manage part of the AURN (Automatic Urban and Rural Network) air quality monitoring stations on behalf of DEFRA.

Details of this additional monitoring including type and location of equipment and monitoring and reporting periods will be discussed with the New Forest District Council Environmental Health Officer and the data will be made available to NFDC monthly, alongside the facility data required under Condition 8.

³ Technical Guidance Note (Monitoring) M1. Sampling requirements for stack emission monitoring. Environment Agency Version 7 March 2016

At this stage, TRL personnel have begun discussions with New Forest District Council's Environmental Health Officer to agree a location for siting a continuous air quality monitoring station, which will include the following:

- Continuous, real time analytical instruments with remote data collection will be used to measure atmospheric concentrations of the following pollutants:
 - Oxides of Nitrogen (NO_x, NO and NO₂);
 - Fine Particles (PM₁₀); and
 - Fine Particles (PM_{2.5}).
- A Diffusion tube NO₂ survey will be deployed to measure average monthly NO₂ concentrations at selected receptors agreed with NFDC. Data obtained from diffusion tubes collocated at the real time monitor inlet will be used to provide a bias adjustment factor to recalibrate the data obtained from the remaining diffusion tubes:
 - 1 x Triplicate NO₂ tubes collocated at the continuous real time monitor; and
 - 7 x Triplicate NO₂ tubes located at agreed receptor locations.
- In addition to measurement of the above pollutants, the air quality monitoring station will also be equipped with meteorological data gathering instruments to record the following parameters:
 - Wind Speed; and
 - Wind Direction.

Measurement of meteorological conditions assists in apportioning potential sources to pollutant concentrations prevailing at a particular time.

Air quality monitoring will be undertaken using the following MCERT & Equivalence approved instruments:

- API Model 200A NO_x Chemiluminescence analyser;
- METOne BAM1020 PM₁₀ & PM_{2.5} Particulate analysers;
- NO₂ Diffusion tubes will be sourced and analysed from the accredited laboratory SAL; and
- Vector Instruments, wind vane and anemometer.

All air quality monitoring and operations will comply with the guidance provided in the DEFRA Local Air Quality Management Technical Guidance document (TG16)⁴

The BAM1020 particulate monitor is a EU/UK Approved equivalent method for use on all UK air quality monitoring networks. The BAM1020 was one of only a select few instruments tested to comply with the CEN 1234-1 reference method during the 2005 BV inter-comparison.

Data from the continuous, on-line instruments will be stored as 15 minute averages in the datalogger associated with the monitoring station. The datalogger will be interrogated remotely via modem several times a day during the monitoring programme to retrieve the air quality data, and to check on the integrity of the instruments.

The analysers will be calibrated periodically by TRL staff throughout the air quality monitoring programme, as part of the Local Site Operator (LSO) aspect of their contract with PEL.

Monitoring Actions based on Data Captured

Alerts will be set on the monitoring equipment, which are triggered if agreed pollutant concentrations are exceeded. If triggered, NFDC and the operator will assess the prevailing conditions, including whether the site was operational at the time or whether the analysers could have been impacted by other third party emissions sources. A suitable action plan will be developed and agreed in those events.

⁴ <https://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf>

While the modelled air quality assessment shows that there will be 0 exceedances of the air quality objective concentration, the operation of the Facilities will be reviewed if more than 5 exceedances of the air quality concentration at the community monitoring station occur where the following variables suggest the source could be the Facilities:

- Data from the Vent Monitors
- Weather conditions
- Actual operational hours
- Measured concentrations at the monitoring equipment.

NFDC will be informed of the review, the conclusions made and action undertaken.

Reports will be prepared by PEL summarising the conclusions from the air quality monitoring programme, and submitted to New Forest District Council's Environmental Health Officer. The reports will be in a form suitable for submission to planning officials to facilitate discharge of the planning conditions, and will also be suitable for distribution to local residents and other local interest groups that have expressed an interest in the potential impact on local air quality of emissions from the operational FGFs.

In addition, to the extent that it is possible and feasible, TRL will allow a Real Time Monitoring facility to be made available to the New Forest District Council Environmental Health Officer.

23 June 2017