Date: 08 March 2018
Our ref: 231766
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NATURAL ENGLAND

BY EMAIL ONLY

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

Dear Mr Riley,

Planning consultation: DAS31717 231766 Potential Parley ERF Report
Location: Christchurch, Dorset

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

This advice is being provided as part of Natural England's Discretionary Advice Service. AECOM Infrastructure & Environment UK Limited has asked Natural England to provide advice upon:

- Review a written report concerning the effects of operating an ERF facility with a SBB facility at West Parley on nearby European and Internationally protected sites.

This advice is provided in accordance with the Quotation and Agreement dated 21/12/2017.

The following advice is based upon the information within, Parley ERF Air Quality Report 171110.

The summary findings are that the report has not considered a number of key aspects:

- Effects in-combination with other processes on the site or other processes currently permitted by the Environment Agency in the surrounding area. To include vehicle movements generated.
- Additional ecological advice should be sought in respect of consideration of effects and potential mitigation.
- The applicant should carry out data searches from the Local Records Centre and source any existing Management Plans eg Merritown Heath (DCC) which may assist in assessing the sensitivity of the sites.
- There are serious concerns about predicted increased levels of NOx, Ammonia, Nitrogen deposition and Acid Deposition. LSE cannot be screened out.
- The applicant should consider the benefits which may be secured from redesigning the proposed plant layout and specifications as well as incorporating air pollution reduction measures.
- Likely benefits from a previous permission which reduced emissions will be lost through increased levels of pollutants.

I enclose a review document relating to a previous application on the site which provides useful background information and Natural England's advice letter.

Previously a reconfiguration application reduced air pollution levels by scaling down both the volume of composting but also therefore the number of heavy vehicle movements. The new proposal should consider the increase in vehicle movements involved in operating the facility.

Natural England advise that the report should use the 1% of Critical Level/Load to screen in or out effects given the sensitivity of the sites concerned.

The report must consider other sources of air pollution in-combination with the proposal at the outset particularly but not only those within the existing facility. The applicant should secure existing historic monitoring data from the site operator to provide a realistic check of existing levels. In addition the applicant should check other EA permitted sources which may contribute to existing pollutant levels.

Stack height and flow rates
Table 2. refers to a combined stack height for the two EFW stacks of 42m, does this mean that there are two 42m stacks, two stacks which are 21m or two stacks of different heights which when combined equal 42m?

P7. It is not clear what the reference to "conservative emission rates" actually means and should be clarified. Does this mean a low figure has been assumed per se or that a low figure from a range of similar plants which have been monitored has been taken? Or is the maximum achievable emission rate with suitable scrubbers etc? The 1mg/m^3 figure requires context and justification.

The SBB stack (15m) is considerably lower than the EFW stacks and is north east of the new building (34m) which may affect the dispersion of pollutants and should be investigated.

Why have you used Stack Flow reference conditions rather than the actual conditions given in Table 2? The assessment should use or at least compare referenced flows against actual conditions one would assume? Natural England advises the worst case scenario should be used which appears to be the actual flow figure. Table 4 should include a column for total emission from the two stacks in-combination.

NOx
As set out above Natural England advise that a 1% level is used for screening purposes and therefore the range of % increases from table 9, 1.3- 15.4% of Critical Levels is a concern which raises consideration of LSE. The report gives PEC % CLe ranging from 45-69% without considering the existing processes or additional vehicle movements at this time. Natural England advise that 70% of the Cle is an appropriate margin below which LSE may be considered acceptable.

Short Term NOx
Similar points arise in that the existing process contributions need to be added in to an in-combination figure. At six points over 70% of the Cle is being received by the sensitive sites.

Sulphur dioxide
The PEC is less than 70% of the Cle so this is not significant.

Ammonia
Natural England advise that the report should consider a Critical Level of 1 μgm^{-3} as well as 3 μgm^{-3} because of the sensitivity of the receptor sites, which include lower plants and lichen species which are more sensitive than higher plants and the need for a precautionary approach. The applicant should consider a site visit to asses conditions at specific locations where existing sources of data is not adequate. Currently a number of locations are exceeding the 70% Cle with a 3 μgm^{-3} Level and a similar number of locations are exceeding a 1% PC.

Nitrogen deposition (Table 13)
Natural England advise that the lower CLo of 10kg/ha should be used and that the applicant will need to consider other contributions in-combination. The applicant is indicating that changes in vegetation composition are likely and so Natural England is not able to rule out adverse effects on the designated sites. Ecological input would be advisable in assessing likely effects to vegetation and lower plants/lichens. Further such effects often occur following a perturbation of the vegetation

such as fire where upon the operation giving rise to the changes is already permitted and restoration against the driver of increased nutrient nitrogen would be difficult to achieve and uncertain to deliver due to resourcing of costs. In some locations there is over 200% of the proposed Critical Load following operation of the proposal.

Acid deposition (Table 14)
The report notes current high background levels but the increases shown are significant leading to predicted 150- 200% of the Critical Level. Natural England cannot conclude that there will not be adverse effects on the soil buffering capacity and also Aluminium ion mobility which will adversely affect lower plants and lichens due to acidification.

The sites Conservation Objectives indicate that where the features are not in favourable condition there should be a requirement to restore rather than simply maintain them.

The report should indicate the likely *areas* of the protected sites likely to be subject to levels of air pollution exceeding the Critical Load/Levels as well as the receptor points identified.

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Natural England would welcome further discussion on the specific concerns raised.

Yours sincerely

Nick Squirrell
Conservation and Planning Lead Advisor
Dorset and Hampshire Team
Dorset, Hampshire and Isle of Wight Area Team
Natural England
Mob: 07766 133697
Email nick.squirrell@naturalengland.org.uk

GFE **GF Environmental Limited**

8 Alcotts Green
Sandhurst
Gloucester
GL2 9PE
T +44 (0) 1452 730240
F +44 (0) 1452 730240
gfynes@gf-environmental.co.uk
www.gf-environmental.co.uk

Re: Air Quality Implications for the Dorset Heathland Habitat of the Comprehensive Redevelopment of the Eco Sustainable Solutions Site, Chapel Lane, West Parley

This document provides an overview of the assessment that was undertaken by GF Environmental Ltd[1] of the impact on the surrounding Dorset Heathland habitat of pollutant emissions associated with the proposed comprehensive re-development of activities on the Eco Sustainable Solutions (Eco) site in Chapel Lane, West Parley. The results from the assessment were presented in Chapter 9 of the ES that was submitted in support of the comprehensive planning application. This document has been prepared in response to consultation comments received from Natural England who requested that the basis for the assessment and the principal conclusions should be provided as a non technical summary.

Introduction

The Eco site is situated adjacent to the Dorset Heathlands SPA, SAC and SSSI, which is designated for the protection of the heathland habitat that grows on the nutrient deficient soils of the area. The heathland habitat is sensitive to nutrient nitrogen deposition as well as to the toxic effects of exposure to conventional pollutants emitted by all combustion processes, including the internal combustion engines associated with transportation. The comprehensive re-development of the Eco site involves the installation of a number of processes with the potential to increase emissions to atmosphere from the site that might be harmful to the surrounding heathland habitat. Accordingly, as part of the detailed air quality assessment undertaken to support the comprehensive planning application, a detailed assessment was undertaken of the potential impact of emissions on the surrounding heathland habitat, in relation to relevant Critical Levels and site-specific Critical Loads.

The assessment was based upon net changes in emissions of nitrogen dioxide, ammonia and sulphur dioxide from activities carried out on the Eco site as a result of the comprehensive re-development. The assessment considered the impact of emissions from the following activities:

- Increase in emissions due to the operation of a Biomass Energy Facility (BEF) that will generate heat and power via the combustion of recovered waste wood brought to the Eco site from Civic Amenity sites throughout Dorset. The BEF was previously approved under Planning Ref: 8/13/0404. However, the impact of the facility on air quality is included in the assessment in order to provide a comprehensive overview of all the processes across the site;
- Increase in emissions due to the operation of a smaller clean biomass combustion plant that will burn non-waste biomass fuels to generate hot water for process heating applications on site;
- Transportation – a DMRB assessment was undertaken to calculate increases in annual average nitrogen dioxide concentrations at specific locations within the heathland habitat. The assessment was based upon projected vehicle movements into and out of the Eco site following the re-development of the Eco site.
- Reduction in emissions due to the decommissioning of four existing diesel generators operated to supply the 910 MWhr/annum electricity requirements of the Eco site;
- Reduction in emissions due to the decommissioning of the current In-Vessel Composting plant with transfer of waste materials to a new dedicated Anaerobic Digestion (AD) plant. The AD plant will generate fuel grade bio-methane for direct injection into the national distribution grid so there will be no emissions of combustion pollutants as might be the case if the bio-methane was to be utilised as a fuel in a gas engine power generation system;
- Reduction in emissions of ammonia due to a reduction in the quantity of green waste composting carried

[1] Comprehensive Planning Application – Detailed Air Quality Assessment. GF Environmental Ltd. August 2014
[2] http://www.apis.ac.uk/
[3] http://www.scail.ceh.ac.uk/cgi-bin/combustion/input.pl

out on site from the current ~35,000 tpa to ~30,000 tpa.

The cumulative reduction in throughput arising from the above changes to the composting activities will result in an ~35% reduction in the current quantities of material being open air composted across the site, with associated reductions in emissions of ammonia and nitrogen deposition.

Assessment Criteria

The assessment was carried out in terms of statutory critical levels for oxides of nitrogen, sulphur dioxide, ammonia and hydrogen fluoride. Reference was also made to location-specific Critical Loads for Nitrogen (kgN/ha/yr) and Acidity (keq/ha/yr) deposition. Assessment criteria were based on Critical Loads defined by the Air Pollution Information System website[2], as well as information from the SCAIL (Simple Calculation of Atmospheric Impact Limits) website[3] provided by the Environment Agency for the location of the Eco site. Background air quality data for NO_X and SO_2 were taken from the Christchurch BC section of the DEFRA 2011-based Background Maps website[4], as well as from the SCAIL website.

Critical Levels Assessment

An initial assessment has been undertaken of Critical Levels in line with the recommendations in Table B4 of the Environment Agency's Horizontal Guidance Note H1 Annex F for oxides of nitrogen, sulphur dioxide, ammonia and hydrogen fluoride at the ecological habitat receptors. The results are shown in the table below.

Table 1 Critical Levels Assessment for Oxides of Nitrogen (NO_X) and Sulphur Dioxide (SO_2) – Cumulative Impact of the BEF and the Clean Biomass Plant

	Annual NOx PC (µg m^{-3})	% Critical Level	Daily NOx PC (µg m^{-3})	% Critical Level	Annual SO_2 PC (µg m^{-3})	% Critical Level
HL01	0.73	2.4%	6.1	8%	0.24	1.2%
HL02	0.99	3.3%	4.8	6%	0.32	1.6%
HL03	1.63	5.4%	10.0	13%	0.55	2.8%
HL04	1.69	5.6%	12.4	17%	0.49	2.4%
HL05	4.65	15.5%	38.6	51%	1.35	6.8%
HL06	1.52	5.1%	29.2	39%	0.43	2.2%
HL07	0.58	1.9%	12.1	16%	0.17	0.8%
HL08	1.80	6.0%	30.8	41%	0.59	2.9%
HL09	0.62	2.1%	11.8	16%	0.20	1.0%
HL10	0.35	1.2%	6.3	8%	0.11	0.5%
HL11	0.34	1.1%	6.0	8%	0.11	0.5%
HL12	0.21	0.7%	5.2	7%	0.07	0.3%
HL13	0.16	0.5%	2.8	4%	0.05	0.3%
HL14	0.14	0.5%	2.5	3%	0.05	0.2%
HL15	0.18	0.6%	2.5	3%	0.06	0.3%

As can be seen, the annual average NO_X Process Contribution is greater than 1% of the annual NO_X Critical Level at several of the ecological receptor locations. However, with an estimated annual average NO_X concentration for the area of ~17 µg m^{-3}, the estimated Process Contributions are unlikely to result in an exceedence of the Critical Level at this location, and can be screened out as insignificant.

A similar situation exists for the daily average NO_X Process Contributions, where estimated Process Contributions are all well below the Critical Level value of 75 µg m^{-3}.

Annual average SO_2 process contributions are <1% of the 20 µg m^{-3} Critical Level at all but the nearest receptor locations, and where the Process Contribution is more than 1% of the Critical Level the highest value, which is at Receptor HL05, represents ~7% of the Critical Level. In view of the fact that the estimated annual average SO_2 concentration for the area is ~2.2 µg m^{-3}, the estimated Process Contributions are unlikely to result in an exceedence of the SO_2 Critical Level, and can be screened out as insignificant.

[2] http://www.apis.ac.uk/
[3] http://www.scail.ceh.ac.uk/cgi-bin/combustion/input.pl
[4] http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2011

The corresponding values for ammonia and hydrogen fluoride are based upon an assumed ammonia concentration in the emissions to atmosphere of 1 mg Nm^{-3}, and for HF emissions from the BEF at the IED ELV of 1 mg Nm^{-3}.

Table 2 Critical Levels Assessment for Ammonia (NH_3) and Hydrogen Fluoride (HF) Due to Emissions from the Biomass CHP Plant

	Annual NH_3 PC ($\mu g\ m^{-3}$)	% Critical Level	Daily HF PC ($\mu g\ m^{-3}$)	% Critical Level	Weekly HF PC ($\mu g\ m^{-3}$)	% Critical Level
HL01	0.006	0.2%	0.03	0.5%	0.012	2.3%
HL02	0.008	0.3%	0.02	0.4%	0.011	2.3%
HL03	0.012	0.4%	0.04	0.9%	0.017	3.3%
HL04	0.015	0.5%	0.06	1.2%	0.035	7.0%
HL05	0.042	1.4%	0.19	3.9%	0.095	18.9%
HL06	0.014	0.5%	0.14	2.7%	0.049	9.8%
HL07	0.005	0.2%	0.05	1.0%	0.012	2.5%
HL08	0.014	0.5%	0.15	3.0%	0.062	12.4%
HL09	0.005	0.2%	0.05	1.0%	0.021	4.2%
HL10	0.003	0.1%	0.03	0.5%	0.011	2.2%
HL11	0.003	0.1%	0.03	0.6%	0.012	2.5%
HL12	0.002	0.1%	0.02	0.4%	0.008	1.6%
HL13	0.001	0.04%	0.01	0.2%	0.004	0.7%
HL14	0.001	0.04%	0.01	0.2%	0.003	0.6%
HL15	0.001	0.05%	0.01	0.2%	0.004	0.7%

As can be seen in the above table, Process Contributions of ammonia and hydrogen fluoride are well below their respective Critical Levels at all of the above habitat sites, and can be screened out as insignificant.

It should be borne in mind that these results are based upon a series of worst case assumptions that may overestimate their significance by an appreciable margin, as discussed earlier.

Deposition Assessment Relative to Site-Specific Critical Loads

The deposition velocities for NO_2, SO_2, NH_3 and HCl were taken from AQTAG 06, apart from HF (See below). The deposition rates for grassland habitats were used as the basis for assessment for the Dorset Heathland habitat receptor locations.

Table 3 Deposition Velocities Used in Calculations

Substance	Deposition Velocity (mm/s)
Nitrogen Dioxide (Grassland)	1.5
Nitrogen Dioxide (Woodland)	3.0
Sulphur Dioxide (Grassland)	12.0
Sulphur Dioxide (Woodland)	24.0
Ammonia (Grassland)	20.0
Ammonia (Woodland)	30.0
Hydrogen Chloride (Grassland)	25.0
Hydrogen Chloride (Grassland)	60.0
Hydrogen Fluoride (Grassland)	2.0

Note: * Reference: Fluorides in the Environment, Weinstein, LH and Davison, AW, CABI Publishing (2004)

Nitrogen Deposition

An assessment of nitrogen deposition was undertaken in relation to site-specific Critical Loads. Critical Load data for nutrient nitrogen deposition that were obtained from the APIS and SCAIL websites. The lower critical load for nitrogen deposition of 10 kgN/ha/yr at the various receptor locations was taken from the APIS website, which also showed that existing levels of nitrogen deposition currently exceed the lower critical load.

Nitrogen deposition rates associated with emissions from the BEF and the clean biomass plant were calculated according to the method recommended by the Environment Agency[5] in AQTAG 06, and as used by Laxen and Marner in a study carried out in support of the development of the

[5] AQTAG 06, Technical Guidance on Detailed Modelling Approach for an Appropriate Assessment for Emissions to Air, Ji Ping Shi, Environment Agency Air Quality Monitoring and Assessment Unit, 20th April 2010.

Dorset and Poole, Local Waste Plan[6]. The method involves the calculation of the annual deposition rate from the annual Process Contribution and the deposition velocity for NO_2 using the following equation.

$$\text{Deposition Rate } (\mu g\ m^{-2} s^{-1}) = \text{Deposition Velocity } (m\ s^{-1}) \times \text{Concentration } (\mu g\ m^{-3})$$

Laxen and Marner commented that NO_X deposits to vegetation mainly via uptake of nitrogen dioxide through stomata, and that nitric oxide does not deposit at a significant rate. Environment Agency guidance recommends using a factor of 70% for the conversion of NO_X to NO_2 to provide a worst case basis for assessment of long term impacts. Accordingly, this conversion rate was used as the basis for calculating the nitrogen deposition rates associated with emissions of NO_X from the BEF and the clean biomass plant. Only dry deposition was considered by Laxen and Marner as wet deposition effects, close to the point of release, are considered to be much less significant than dry deposition mechanisms.

> *Wet deposition of the emitted pollutants this close to the emission source will be restricted to wash-out, or below cloud scavenging. For this to occur, rain droplets must come into contact with the gas molecules before they hit the ground. Falling raindrops displace the air around them, effectively pushing gases away. The low solubility of nitrogen dioxide and nitric oxide means that any scavenging of these gases will be a negligible factor.*

The results from the nitrogen deposition rate calculations are summarised in the following table and are based upon emissions of NO_X and NH_3 from the BEF and the clean biomass plant.

Table 4 Process Contribution to Nutrient Nitrogen Deposition Due to Emissions of NO_X and NH_3 from the BEF and the Clean Biomass Plant

Receptor Name	Deposition (kgN/ha/yr)	Deposition (kgN/ha/yr) (PC as % Lower Critical Load)	Deposition (kgN/ha/yr) (PEC as % Lower Critical Load)
HL01	0.10	1.0%	13%
HL02	0.14	1.4%	14%
HL03	0.23	2.3%	14%
HL04	0.25	2.5%	14%
HL05	0.69	6.9%	16%
HL06	0.22	2.2%	14%
HL07	0.08	0.8%	13%
HL08	0.26	2.6%	14%
HL09	0.09	0.9%	13%
HL10	0.05	0.5%	13%
HL11	0.05	0.5%	13%
HL12	0.03	0.3%	13%
HL13	0.02	0.2%	13%
HL14	0.02	0.2%	13%
HL15	0.03	0.3%	13%

The results show that nitrogen deposition attributable to emissions of NO_X and NH_3 from the BEF and the clean biomass plant is predicted to be less than 1% of the site-specific Lower Critical Load, apart from the nearest receptor locations, where the highest value represents ~7% of the Critical Load. Despite the fact that the Critical Load for nitrogen deposition is currently exceeded at the above locations, the magnitude of the Process Contribution is small and is probably not measurable with any reasonable degree of accuracy.

When nitrogen deposition attributable to the estimated background NO_2 concentration for the area of 12.8 µg m^{-3} is taken into account with the increase in concentration due to emissions of NO_X and NH_3 from the two new combustion plant, the resulting PEC value represents a value of ~13% of the lower critical load and can therefore be screened out as insignificant.

It should also be noted that exceedence of a Critical Load is not a quantitative estimate of damage to a particular habitat, but represents the potential for damage to occur. There is no evidence in the available literature to indicate that the above habitats are suffering as a consequence of nitrogen deposition from nearby sources. Accordingly, on this basis, the incremental increase in nitrogen deposition attributable to emissions of NO_X and NH_3 from the BEF and the clean biomass plant is small and is unlikely to have a measurable effect on the

[6] An Assessment of Possible Air Quality Impacts on Vegetation from Processes Set out in the Bournemouth, Dorset & Poole Waste Local Plan, Air Quality Consultants Ltd, April 2005

integrity of the above ecological habitat sites.

Impact of Vehicular Emissions

Vehicle movements into and out of the Eco site following the comprehensive re-development of the Eco site will result in a worst case increase in NO_X concentration of ~1.3 µg m^{-3} at the nearest point within the Parley Common SSSI (Receptor No. HL08), with an associated nitrogen deposition rate of ~0.13 kgN/Ha/yr.

As the basis for a worst case assessment, the estimated increase in nitrogen deposition at Receptor No. HL08 was applied to all of the specific receptors, and added to the process contributions associated with emissions of NO_X and NH_3 from the BEF and the clean biomass plant. The aggregate nitrogen deposition due to these three sources is summarised in the following table.

Table 5 Process Contribution to Nutrient Nitrogen Deposition Due to Emissions of NO_X and NH_3 from the BEF, the Clean Biomass Plant and Vehicular Emissions Associated With Deliveries To and From the Eco Site

Receptor Name	Deposition PC (kgN/ha/yr)	Deposition (kgN/ha/yr) (PC as % Lower Critical Load)	Deposition PEC (kgN/ha/yr)	Deposition (kgN/ha/yr) (PEC as % Lower Critical Load)
HL01	0.23	2%	2.1	21%
HL02	0.27	3%	2.1	21%
HL03	0.36	4%	2.2	22%
HL04	0.38	4%	2.2	22%
HL05	0.82	8%	2.7	27%
HL06	0.35	3%	2.2	22%
HL07	0.21	2%	2.1	21%
HL08	0.39	4%	2.2	22%
HL09	0.22	2%	2.1	21%
HL10	0.18	2%	2.0	20%
HL11	0.18	2%	2.0	20%
HL12	0.16	2%	2.0	20%
HL13	0.15	2%	2.0	20%
HL14	0.15	2%	2.0	20%
HL15	0.16	2%	2.0	20%

The results show that nitrogen deposition attributable to emissions of NO_X and NH_3 from the BEF and the clean biomass plant, and the worst case deposition associated with vehicle movements to and from the development site, is predicted to more than 1% of the site-specific Lower Critical Load, with the highest value representing ~8% of the Critical Load. When considered in conjunction with the estimated NO_2 background concentration of 12.8 µg m^{-3} the associated PEC values are ~20% of the lower critical load for nitrogen deposition, and can be screened out as insignificant.

Impact of Emissions from On-Site Diesel Generators

The BEF development will involve decommissioning the four large diesel generators that are currently used to provide all on-site electrical requirements. This will result in a net reduction in emissions of NO_X from the Eco site, and the associated nitrogen deposition within the surrounding heathland habitat. The results for the diesel generators are presented in the following table.

Table 6 Process Contribution to Nitrogen Deposition Due to Emissions of NO_X from the Four Diesel Generators

Receptor Name	Deposition (kgN/ha/yr)	Deposition (kgN/ha/yr) (PC as a Percentage of Lower Critical Load)
HL01	0.02	0.2%
HL02	0.02	0.2%
HL03	0.04	0.4%
HL04	0.05	0.5%
HL05	0.23	2.3%
HL06	0.09	0.9%
HL07	0.05	0.5%

Receptor Name	Deposition (kgN/ha/yr)	Deposition (kgN/ha/yr) (PC as a Percentage of Lower Critical Load)
HL08	0.11	1.1%
HL09	0.03	0.3%
HL10	0.01	0.1%
HL11	0.02	0.2%
HL12	0.01	0.1%
HL13	0.004	0.04%
HL14	0.003	0.03%
HL15	0.01	0.05%

The development of the BEF at the Eco site will eliminate the need for the diesel generators, as the electrical requirements for process activities on-site will be drawn directly from the power output from the turbine associated with the BEF. Accordingly, as the generators will no longer be operational the reduction in emissions of NO_X from the diesel generators can be offset against the increase that will arise from the operation of the BEF, the clean biomass plant and the increased vehicle movements associated with the operation of the AD facility summarised above in **Table 5** above.

Table 7 Cumulative Process Contribution to Nitrogen Deposition Due to Emissions of NO_X from the BEF, the Clean Biomass Plant and Vehicular Emissions Following the Decommissioning of the Diesel Generators

Receptor Name	Deposition – Cumulative (kgN/ha/yr)	Cumulative Deposition (kgN/ha/yr) (% of Lower Critical Load)	Deposition PEC (kgN/ha/yr)	Deposition (kgN/ha/yr) (PEC as % Lower Critical Load)
HL01	0.21	2.1%	2.1	21%
HL02	0.25	2.5%	2.1	21%
HL03	0.32	3.2%	2.2	22%
HL04	0.33	3.3%	2.2	22%
HL05	0.59	5.9%	2.4	24%
HL06	0.25	2.5%	2.1	21%
HL07	0.17	1.7%	2.0	20%
HL08	0.28	2.8%	2.1	21%
HL09	0.19	1.9%	2.0	20%
HL10	0.17	1.7%	2.0	20%
HL11	0.16	1.6%	2.0	20%
HL12	0.15	1.5%	2.0	20%
HL13	0.15	1.5%	2.0	20%
HL14	0.15	1.5%	2.0	20%
HL15	0.15	1.5%	2.0	20%

Note: Values in red denote that the deposition rate exceeds 1% of the site-specific Critical Load

As can be seen from the above results, the cumulative impact of removing the diesel generators as part of the comprehensive development, reduces the potential impact of NO_X emissions from the Eco site on nitrogen deposition within the Dorset Heathlands habitat. Although the cumulative Process Contribution values are >1% of the lower critical load, when considered in conjunction with the estimated NO_2 background concentration of 12.8 μg m^{-3} the associated PEC values are ~20% of the lower critical load, and can be screened out as insignificant.

Cumulative Impact of Associated Reductions in On-site Composting Activities

As part of the comprehensive planning application the current IVC operations will be decommissioned and removed, and despite a slight increase in the quantity of green waste composting to be carried out on site, there will be an overall ~35% reduction in open air compost throughput as a result of the proposed changes. The proposed reduction in composting activities has been factored into the deposition assessment as follows.

The calculation of nitrogen deposition associated with fugitive ammonia release from the open air composting activities was based upon measured data for ammonia derived from diffusion tube measurements in the vicinity of the Eco site. The results at two locations, one on the eastern boundary of the site with the adjacent Hurn Common SSSI (process plus background), and another at Parley Manor (background) were used to derive a process contribution for ammonia attributable to the composting activities on site. The results are shown in the table below.

Table 8 Results from Ammonia Diffusion Tube Monitoring

Location	Ammonia Concentration (µg m^{-3})
Parley Manor (Background)	1.7
East of site – Hurn Common SSSI boundary (Process contribution + background)	2.8

As can be seen, the concentration of ammonia at Parley Manor was 1.7 µg m^{-3} over the exposure period. Parley Manor is regarded as a background monitoring site in view of its south-westerly location, approximately 1.5km upwind of the site in Chapel Lane. Accordingly, the Process Contribution for ammonia from composting activities at the edge of the Hurn Common SSSI is estimated to be ~1.1 µg m^{-3}.

For the purpose of the deposition assessment it has been assumed that the Green Waste compost and the CLO compost emit similar levels of ammonia during the maturation process. The ammonia concentration measured in the vicinity of the site of 1.1 µg m^{-3}, is assumed to be the Process Contribution due to the composting activities on the Eco site, and would be expected to vary in relation to the throughput of waste being composted.

Accordingly, the measured Process Contribution value to background ammonia concentrations was adjusted to reflect the ~35% reduction in throughput, giving a revised Process Contribution to background ammonia concentrations of ~0.7 µg m^{-3}. This value was then used to calculate the nitrogen deposition rates due to ammonia at receptor locations within the Dorset Heathland habitat adjacent to the Eco site.

The cumulative results of all proposed changes to on-site operations resulting from the comprehensive re-development are presented in the following table.

Table 9 Net Change in Process Contribution to Nitrogen Deposition Due to the Comprehensive Re-Development of the Eco Site

Receptor Name	Increase in Deposition Due to BEF, CBP & Vehicle NO_x Emissions (kgN/ha/yr)	Reduction in Deposition Due to 35% Reduction in Composting (kgN/ha/yr)	Reduction in Deposition Due to Decommissioning the Diesel Generators (kgN/ha/yr)	Difference (kgN/ha/yr)	Cumulative Impact of Comprehensive Development (% Lower Critical Load)
HL01	0.23	-2.03	-0.02	-1.81	-18%
HL02	0.27	-2.03	-0.02	-1.78	-18%
HL03	0.36	-2.03	-0.04	-1.71	-17%
HL04	0.38	-2.03	-0.05	-1.70	-17%
HL05	0.82	-2.03	-0.23	-1.44	-14%
HL06	0.35	-2.03	-0.09	-1.77	-18%
HL07	0.21	-2.03	-0.05	-1.86	-19%
HL08	0.39	-2.03	-0.11	-1.75	-18%
HL09	0.22	-2.03	-0.03	-1.84	-18%
HL10	0.18	-2.03	-0.01	-1.86	-19%
HL11	0.18	-2.03	-0.02	-1.87	-19%
HL12	0.16	-2.03	-0.01	-1.88	-19%
HL13	0.15	-2.03	-0.004	-1.88	-19%
HL14	0.15	-2.03	-0.003	-1.88	-19%
HL15	0.16	-2.03	-0.005	-1.88	-19%

Values in green represent a decrease when compared to the current situation. As can be seen, the results show that the cumulative impact of the comprehensive re-development of the Eco site is likely to result in a significant overall reduction in nitrogen deposition within the surrounding Dorset Heathlands habitat.

The reduction represents on average, a value equivalent to ~17% to ~19% of the Lower Critical Load for nitrogen deposition in the vicinity of the Eco site. The one exception is Receptor No. HL05, which is closest to the chimney of the BEF, with associated higher deposition rates. Nevertheless, the assessment confirms that nitrogen deposition at Receptor HL05 will still be ~14% lower when the comprehensive redevelopment of the Eco site has been completed, compared to the situation associated with the existing operations.

Acid Deposition

A similar approach was adopted for the assessment relative to the critical load functions for acid deposition at the various receptor locations within the Dorset Heathland habitat. As was the case with nitrogen deposition, the literature data indicate that the Critical Load for acid deposition is currently exceeded at the receptor locations around the Eco site. The assessment followed the same procedure that was used in the assessment of nitrogen deposition, and the results from the cumulative impact assessment for the various activities associated with the comprehensive re-development of the Eco site are summarised in the following table.

Table 10 Process Contribution to Acid Deposition – Cumulative Impact Due to the Comprehensive Re-development of the Eco Site

Receptor Name	Increase in Deposition Due to Emissions of NO_X, SO_2, HCl, HF & NH_3 from the BEF, CBP & Vehicles (keq/ha/yr)	Reduction in Deposition Due to Decommissioning of Diesel Generators (keq/ha/yr)	Reduction in Deposition Due to 35% Reduction in Composting (keq/ha/yr)	Cumulative Impact of the Comprehensive Re-development (keq/ha/yr)
HL01	0.05	-0.001	-0.144	-0.09
HL02	0.07	-0.001	-0.144	-0.08
HL03	0.10	-0.003	-0.144	-0.04
HL04	0.10	-0.003	-0.144	-0.05
HL05	0.26	-0.016	-0.144	0.10
HL06	0.09	-0.007	-0.144	-0.06
HL07	0.04	-0.003	-0.144	-0.11
HL08	0.11	-0.008	-0.144	-0.04
HL09	0.04	-0.002	-0.144	-0.10
HL10	0.03	-0.001	-0.144	-0.12
HL11	0.03	-0.001	-0.144	-0.12
HL12	0.02	-0.0005	-0.144	-0.12
HL13	0.02	-0.0003	-0.144	-0.13
HL14	0.02	-0.0002	-0.144	-0.13
HL15	0.02	-0.0004	-0.144	-0.13

Values in green represent a decrease when compared to the current situation. As can be seen, as a result of the comprehensive re-development of the Eco site, acid deposition in the surrounding Dorset Heathlands habitat is likely to be significantly lower than that associated with current operations. The one exception is at the nearest receptor location to the chimney of the BEF (Receptor No. HL05), although the estimated increases at this location is small, and probably not measurable with any reasonable degree of accuracy.

Exceedence of a Critical Load is not a quantitative estimate of damage to a particular habitat, but represents the potential for damage to occur. There is no evidence in the available literature to indicate that the above ecological receptors are currently suffering as a consequence of acid deposition from nearby sources.

Geoff Fynes

Geoff Fynes

Via email
23rd March 2015

Date: 25 March 2015
Our ref: 139058
Your ref: 8/14/0515

NATURAL ENGLAND

BY EMAIL ONLY

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

Dear Mr Fynes

Planning consultation: Proposed reconfiguration of existing and consented development; introduction of new plant and processes; increase in permitted throughput; partial widening of access road; partial realignment of Bridleway E62/29; new landscaping and associated matters.
Location: Chapel Lane, West Parley, Dorset

Thank you for your consultation on the above dated 23 March 2015 which was received by Natural England on 23 March 2015.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

Air Pollution Assessment Summary

Aerial emissions assessment – critical levels

NOx aerial emissions assessment conclusions, Natural England agrees with the conclusion reached for aerial levels of NOx at a daily and annual average rate in relation to there being no likely significant effects on the nearby specially protected heathland.

SO2, HF and annual ammonia aerial emissions assessment conclusions, Natural England agrees with the conclusions reached for aerial levels of these pollutants at a daily and annual average rate in relation to there being no likely significant effects on the nearby specially protected heathland.

Deposition assessment relative to Critical Loads

N2 deposition, the conclusion for the combined deposition for BEF, Clean Biomass and Vehicular emissions represents between 1-8% of the Critical Level for the lower value of the range for heathland. This clearly triggers the consideration of likely significant effect. Which is above 1% of the lower Critical Level.

Natural England concurs with the view that the contribution from the diesel generators may be discounted for both nitrogen deposition and NOx considerations.

The modification in ongoing processes eg IVF (onsite composting) by 35% by volume will have a consequent reduction in emissions of nitrogen deposited on the nearby heathland. Natural England remains unconvinced by the applicants assertion of a 1:1 effect from differing processes (GLO and green waste composting).

Table 9 provides a useful summary of the increases and decreases in N deposition and gives a range of 14 to 18% reduction in Critical Loads at all sites. This table includes data from BEF, CBP and Vehicle NOx emissions converted into an annual deposition rate. The applicant has assumed that reductions due to reduced composting volumes will be consistent without considering distance from the source of the emissions. However Natural England advise that the margin of reductions predicted 14-18% are such that it appears clear that even allowing a margin for error there will be an overall reduction in level of nitrogen deposition on the adjacent specially protected heathlands.

Natural England is able to advise that Natural England has **no objection** to the authority granting an approval in respect of the effects of air pollution on the Dorset Heathlands SPA and Dorset Heaths SAC.

We would be happy to comment further should the need arise but if in the meantime you have any queries please do not hesitate to contact us.

For any queries relating to the specific advice in this letter only please contact Nick Squirrell. For any new consultations, or to provide further information on this consultation please send your correspondences to consultations@naturalengland.org.uk.

Yours sincerely

Nick Squirrell
Conservation and Planning Lead Advisor
Dorset and Hampshire Team
Dorset, Hampshire and Isle of Wight Area Team
Natural England
Mob: 07766 133697
Email : nick.squirrell@naturalengland.org.uk

green waste composting).

Table 9 provides a useful summary of the increases and decreases in N deposition and gives a range of 14 to 18% reduction in Critical Loads at all sites. This table includes data from BSF, CBP and Vehicle NOx emissions converted into an annual deposition rate. The applicant has assumed that reductions due to reduced composting volumes will be consistent without considering distance from the source of the emissions. However Natural England advise that the margin of reductions predicted 14-18% are such that it appears clear that even allowing a margin for error there will be an overall reduction in level of nitrogen deposition on the adjacent specially protected heathlands.

Natural England is able to advise that Natural England has **no objection** to the authority granting an approval in respect of the effects of air pollution on the Dorset Heathlands SPA and Dorset Heaths SAC.

We would be happy to comment further should the need arise but if in the meantime you have any queries please do not hesitate to contact us.

For any queries relating to the specific advice in this letter only please contact Nick Squirrell. For any new consultations, or to provide further information on this consultation please send your correspondences to [illegible]

Yours sincerely

Nick Squirrell
Conservation and Planning Lead Advisor
Dorset and Hampshire Team
Dorset, Hampshire and Isle of Wight Area Team
Natural England
Mob: 07769 135637
Email : nick.squirrell@naturalengland.org.uk