Environment Agency permitting decisions

Bespoke Variation

We have decided to issue the variation for Ruskington Foods operated by Tulip Limited.

The variation number is EPR/UP3332HY/V004.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Description of the changes introduced by the variation
- Key issues
- Annex 1 the decision checklist
- Annex 2 the consultation and web publicising responses

Description of the changes introduced by the Variation

This is a Substantial Variation.

The variation is for the installation of a Regenerative Thermal Oxidiser (RTO) to be used as odour abatement for the site fryers, grill line and ovens.

Key issues of the decision

BAT Assessment for the installation of a Regenerative Thermal Oxidiser as odour abatement.

BAT for the prevention of air emissions for Food, Drink and Milk Installations can be segregated as follows. An assessment of the proposed techniques to be used at Ruskington Foods against BAT was carried out, the results are confirmation that the site is operating to BAT and are detailed below:

- Apply and maintain an odour emissions control strategy incorporating:
    - Definition of the problem
        - Details of this have been included in the Odour Management Plan (OMP) submitted with the application and includes the identification of the odour sources as the onsite fryers and ovens, the local receptors and a detailed complaints log which includes weather conditions and wind direction.
    - An inventory of site emissions including abnormal operation
        - Details of this has been included in the OMP submitted with the application and includes a risk assessment and control measures for all aspects of the site operations ranging from receipt of raw materials to packaging and storage of the final product.
    - Measuring the major emissions
        - An odour dispersion survey has been carried out on site and the results can be found in their OMP Plan submitted with the application.
    - Assessing and selecting the air emissions control technique
        - Following a risk assessment of all potential odorous emissions from the installation, including details of control measures (summarised below), was carried out. The results of the risk assessment show that abatement for odour emissions is required on site.
            - Monitoring of the frying oil quality, where oil is changed based on TPM (Total Polar Material) level, a parameter which indicates the level of chemical deterioration the oil has undergone and the potential for a higher risk of odour creation.
            - Filters are fitted within each frying line stack.
            - The aforementioned filters are regularly cleaned (every 8 hours) as per the manufacturers recommendations.
            - Fryer stacks are 11m high (from the ground).
- Collect waste odours at source and duct them to the treatment or abatement system:
    - Details of how this will be carried out are included in the Regenerative Thermal Oxidiser (RTO) proposal document submitted with the application and includes confirmation that

ducting is to be installed directly over fryer exhaust points which will combine all air emissions to be transported to the RTO.
    - The operator has confirmed that the transport ducting meets the following BAT requirements:
        - Incorporating cleaning points and drain valves
            - There will be inspection/clean out doors every 5m.
        - There will be a minimum transport velocity of 8.75 m/s.
        - The maximum angle of the entry of any branches to the main duct is 45º.
        - Control systems for discontinuous exhaust flows are required.
            - 12 manual dampners will be installed to balance the flow to the RTO.
- Optimise start-up and shut-down procedures for the odour emission abatement equipment to ensure that it is always operating effectively at all of the times when abatement is required.
    - An RTO is only effective once it has reached the combustion temperature of the pollutants, the 'start-up' time must take this into account.
        - The RTO and the fryers are interlocked so that the fryers cannot run until the RTO is at 800ºC.
        - The operator has supplied information which shows that a temperature of 850ºC is required for the RTO to function efficiently.
        - The operator has supplied confirmation that the RTO will be a direct flame system.
        - The operator has confirmed that the RTO will be fed air/oxygen via a variable speed combustion air fan to optimise the efficiency of the burn and ensure there is sufficient oxygen available.
        - The operator has confirmed that the Lower Explosive Limit for combined VOCs/organics is 0.15%.
        - The operator has confirmed that a 'low NOx' burner is to be used in the RTO.
        - The operator has confirmed that there are no other contaminants present in the emissions to the RTO.
- Where process-integrated BAT do not eliminate odour nuisance, apply abatement techniques:
    - When selecting odour abatement techniques, the first stage is to analyse the flow rate, temperature, humidity, particulate and contaminant concentrations of the malodorous emission.
        - The operator has supplied information that shows these factors have been considered in their abatement technique selection. Focussing on these parameters alone would result in the use of a Plasma being the most effective technique. However justifications as to why plasma has not been proposed have been submitted by the operator and are detailed as follows:

- plasma becomes ineffective at inlet temperatures in excess of 80ºC, the inlet temperature on site will likely be in excess of 90ºC.
- An RTO is 99.9% guaranteed to remove all odour, whereas plasma is only 96% effective.
- The volume of air to be treated on site would require the use of multiple plasma units which would make the abatement costs excessive in comparison to an RTO.

Assessment of the Odour Management Plan

Objectives

- Employ appropriate methods, including monitoring and contingencies, to control and minimise odour pollution.
- Prevent unacceptable odour pollution at all times.
- Reduce the risk of odour releasing incidents or accidents by anticipating them and planning accordingly.

Control measures

Source materials

- Raw materials
    - All meat is wrapped and stored in a fridge or freezer, seasonings are delivered in sealed plastic or papers sacks or buckets and stored within a building.
        - No odour likely from this part of the process.

- Processing & Forming
    - Processing occurs within a building and there is no extraction to the atmosphere.
        - No likely odour from this part of the process.
- Extraction flue gas from the frying process
    - The operator has provided a risk assessment which shows there is a maximum of a ‘medium’ risk of odour from the frying process which is extracted through fryer flues, process mitigation measures are utilised (see below).
- Packing and Despatch
    - The cooked finished product is passed through a chiller/freezer to bring it down to storage temperature. The packaging and despatch is carried out within a building which has no point source emissions to atmosphere.
        - No likely odour from this part of the process.
- Hygiene
    - All production areas of the factory are wet cleaned on a daily basis, this involves washing down all equipment walls and floors with cleaning chemicals.

        - No likely odour from this part of the process.
- Maintenance
    - Routine and Planned Preventative Maintenance (PPM) is carried out by Tulip Engineers and external contractors.
        - No likely odours from this part of the process.
- Waste storage
    - Food waste is collected from the factory and tipped into a skip which is then covered and is stored inside the waste management building. The skip is collected 3 times per week.

Releases

Odorous releases from the process and waste storage are contained within buildings which have no extraction to atmosphere, with the exception of the frying process.

The following fryer line extract points will now be routed through an appropriately designed (please see BAT Assessment section) Regenerative Thermal Oxidiser (RTO):

- Factory 1 Fryers, extract points A1-A8,
- Factory 2 Fryer, extract point A20,
- Factory 2 In Line Cooker, extract points A21 & A22.

Extract points A15-A19, which are the Factory 1 Fryer Cell Room Extracts, are not routed to the RTO. However, this extract will consist mainly of non-odorous air due to the localised extraction above frying lines 1-6 (A8-A14) and the 'new' line 0 (A35 and A36) in Factory 1.

Impacts

The site location, local sensitive receptors, historical complaints and monitoring records have been included in the management plan.

Monitoring

The site has an odour monitoring procedure on site which incorporates both proactive monitoring (the routine monitoring of site performance around the plant and the site perimeter) and reactive monitoring (in response to changes in regulatory requirements or to qualify and quantify complaints). Both of these styles of monitoring will be recorded on an Odour Monitoring Form and filed. It has been proposed that an odour emission limit for the RTO will be subject to an agreed test protocol, and thus an improvement condition has been included which requires the operator to provide a report which includes an odour emission limit and justification.

Process

Process control measures utilised on site to prevent and/or minimise odour emissions are as follows:

- Each extract point has 3 sets of filters. The filters are rotated once every 8 hours for cleaning (soaking in detergent, oil removal and final wash).
- Poor (frying) oil quality, which is due to chemical deterioration that occurs during use, can contribute to excessive odour emissions. To ensure the quality of the oil is acceptable the Total Polar Material (TPM) is monitored, and the oil is changed when the TPM reaches a certain level. This generally equates to once per week.
- The overheating of frying oil can also contribute to excessive odour emissions, including the 'burning' of the product in the oil. The temperature of the oil is digitally controlled to maintain a stable level (170ºC – 195ºC +/- 5ºC).

Emissions

Emissions from the process have operational controls in place as described above and the RTO will be operated in accordance with BAT. Both of these measures, coupled with a monitoring procedure with contingency measures in place, will reduce the risk of odour pollution from point source and fugitive emissions.

Dispersion and Exposure/impact

Prior to this variation application, Tulip commissioned olfactory testing which was completed by a consultant. An odour dispersion plan was produced which indicated that the site was above $3ou_E/m^3$ at nearby receptors and thus the operator carried out an option appraisal assessment for odour abatement, 3 mitigation options were identified as follows:

1. Dry Scrubbing (Carbon adsorption),
2. Regenerative Thermal Oxidiser (RTO),
3. U.V. System.

The following factors were instrumental in reaching the final abatement option decision for each mitigation option:

1. The levels of VOC in the air emission from the fryer stacks would result in a high carbon consumption rate which would require up to 5 change-outs per year.
2. Gas consumption for a 98% thermally efficient RTO is significant, but the heat generation can be used to heat water, minimising the use of boilers and thereby actually reducing overall annual gas usage.
3. Comment from an odour expert: "We know that technologies utilising ozone, U.V. light or ionised air are available, however we have encountered 4 such examples used in food, in each case the systems failed to control the odour".

Based on information including the above, the operator decided to opt for a Regenerative Thermal Oxidiser.

Contingency control measures

Where trigger values have been exceeded or observations indicate odour pollution an operator will be required to take appropriate contingency measures.

- The RTO system will be checked by the supplier.
- The HSE Manager will carry out an investigation into current site production patterns.
- Production in any area suspected of producing elevated odour levels will be stopped until the cause can be identified and corrected.
- Extraction from the factory to the atmosphere can be switched off to contain odours if necessary.

In order to be prepared for effective contingency management, the operator has carried out an odour risk assessment for both normal and abnormal operating conditions and has developed a 3 stage reactive/proactive monitoring and contingency plan which can demonstrate:

- Whether actions taken to reduce odours have been effective.
- Through continuous checks, whether control measures put in place are effective.

Incidents and emergencies

The operator has carried out a risk assessment for normal and abnormal operating conditions, providing explanations as to how the site will:

- Identify the risk, assess the risk and manage the risk in order to plan for and take appropriate steps to reduce the likelihood of the incident occurring,
- Minimise any impact should an incident occur, and
- To recover control of the process as quickly as possible following and incident or emergency.

H1 assessment of emissions to air from the installation of a Regenerative Thermal Oxidiser

The operator supplied a H1 assessment for the potential human health and ecological risks of the proposed emissions to air using the H1 screening tool. The results of this tool showed that short term emissions of Carbon Monoxide (CO) 'screen out' but long and short term emissions of Nitrogen Dioxide (NO_2) from the RTO could potentially be significant:

Pollutant	AAD*$_{LT}$ (µg/m3)	Background Concentration (µg/m3)	Long term (potentially significant if PC >1% and PEC >70% of AAD$_{LT}$)			
			PC (µg/m^3)	PC as % AAD$_{LT}$	PEC (µg/m3)	% PEC of AAD$_{LT}$
NO_2 (annual)	40	12	26.5	66.3	38.5	96.3

Pollutant	AAD$_{ST}$ (µg/m3)	Background Concentration (µg/m3)	Short term (potentially significant if PC >10% AAD$_{ST}$ and PC as % of headroom >20%)			
			PC (µg/m^3)	PC as % AAD$_{ST}$	PC as % of headroom (AAD-2xBackground$_{LT}$)	PC as % of headroom >20%?
NO_2 (hourly)	200	24	260	130	147	Yes

Pollutant	AAD*$_{LT}$ (µg/m3)	Long term (potentially significant if PC >1% of AAD$_{LT}$)		AAD*$_{ST}$ (µg/m3)	Short term (potentially significant if PC >10% AAD$_{ST}$)	
		PC (µg/m^3)	PC as % AAD$_{LT}$		PC (µg/m^3)	PC as % AAD$_{ST}$
NO_2 (annual for nature conservation sites)	30	26.5	88.3	75	260	346.7

Pollutant	AAD$_{ST}$ (µg/m3)	Short term (potentially significant if PC >10% AAD$_{ST}$)	
		PC (µg/m^3)	PC as % AAD$_{ST}$
CO (8hr running average over 24hrs)	10,000	519	5.2

*AAD – Ambient Air Directive Limits

Detailed modelling was therefore requested for emissions of NO_x, for potential impacts to human health and 3 nearby Local Wildlife Sites (LWS). The results supplied in the final report, and associated modelling files, have been audited in detail including check modelling with sensitivity to our observations. The conclusion that the emissions of these parameters are not likely to cause harm to either human health or the 3 nearby LWS, has been reached.

The consultant used Air Dispersion Modelling Software ADMS (version 5.1) for their assessment.

The assessment used meteorological data observed at Cranwell for the years 2007 to 2011. Cranwell airport is approximately 8km to the west of the site and based on a review of available Meteorological sites and local topography, the data are likely to be representative.

Detailed Modelling Input Data Summary, and Justifications

The background concentration of NO_x and NO_2 are derived from the Defra interpolated background data for reference year 2013 from the DEFRA website for the grid square in which Ruskington Foods falls (NGR: 508450, 350350), as the local background diffusion tube sites operated by North Kesteven District Council are not truly representative of the air quality conditions local to the Tulip Factory.

A total of 56 human receptors have been identified and included into the assessment by the operator, these were entered into our screening tool as discrete receptors and have been used in the assessment along with a 'grid receptor' approach.

The consultant states that their calculated emission rate of 0.449 g/s for NO_2 is based on plant specifications (<100mg/Nm^3 NO_x) provided by the RTO manufacturer (included in the application supporting documents) with a normalised volumetric flow rate of 12.59m^3/s.

The mass emission rate for NO_x has been expressed as NO_2 utilising a 100% conversion of NO_x to NO_2 for long term (annual mean) and a 50% conversion for short term (hourly mean) as described in the Environment Agency's emissions to air risk assessment guidance document (https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit).

The assessment is conservative in the fact that it assumes the RTO will operate 100% of the time, when in practice this will not be the case, and also that the conversion of NO_x to NO_2 used is 100% for long term emissions and 50% for short term emissions. These values are used for screening purposes, and for detailed modelling, the less conservative 75% long term and 35% short term conversion assumptions are more appropriately used.

The terrain in the area surrounding the factory is relatively flat and unlikely to have a significant impact on the dispersion, and hence, terrain data have not been utilised.

The tallest building dimensions have been included into the assessment to incorporate the potential effects of 'downwash' on the dispersion of the discharge.

A roughness length of 0.3m has been used in the dispersion modelling, this is considered appropriate for the surrounding area and is suggested within ADMS 5 software as being suitable for 'agricultural areas (max)'.

Dispersed impacts were predicted over the area NGR: 506415, 348270 to 510415, 352270. A Cartesian grid with a resolution of 20m was included in the model for an area of 140, by 200m covering the main factory area, with a 50m resolution grid extending beyond 1oom from the central grid, followed by a grid with 100m resolution to a further 200m and beyond this the resolution is reduced to 200m and then 400m. These results were used to produce contour plots.

The stack details, emission rates and parameters used in the model are as follows:

Stack Details				
Source	**NGR**	**Type**	**Effective Height (m)**	**Stack Diameter (m)**
RTO Dispersion Stack	508489, 350360	Point Source	14	1.15

Emission Rates & Parameters					
Source	**Efflux Velocity (m/s)**	**Temperature (ºC)**	**Volumetric Flow Rate (m^3/s)**	**Actual Oxygen (%)**	**Moisture Content (%)**
RTO	12.1	110	12.59	19.5	4
Concentration (annual, mg/m^3)	**Concentration (hourly, mg/m^3)**	**Release Rate (annual, mg/m^3)**	**Release Rate (hourly, mg/m^3)**		
100	50	1.26	1.26		

We are satisfied that the numerical predictions made by the consultant can be considered as a reasonable worst case for the RTO impact alone. There are however high uncertainties in the emissions rates, as these have not been validated, and their assessment does not consider impacts from other NO_x emitting sources at the installation (A1-A7 and A37).

The numerical results of the detailed modelling assessment can be found below.

Impact to Human Health from RTO emissions assessment Results

Detailed modelling - Human Health Impact Assessment														
NO_x (as NO_2)														
Receptor	NGR		Background Concentration (µg/m^3)	Mass Emission Rate (g/s)		AAD		Long term (significant if PEC > AAD)				Short Term (significant if PEC > AAD)			
	X	Y		Long Term	Short Term	Long Term µg/m^3 (annual mean)	Short Term µg/m^3 (hourly average)	PC (µg/m^3)	PC as % of AAD	PEC (µg/m^3)	PEC as % of AAD	PC (µg/m^3)	% PC of AAD	PEC (µg/m^3)	PEC as % of AAD
H1	508503.6	350483.8	12	0.449	0.224	40	200	1.289	3.2225	13.289	33.2225	1.289	0.6445	13.289	6.6445
H2	508538.8	350487.4						1.942	4.855	13.942	34.855	1.942	0.971	13.942	6.971
H3	508592.3	350492.3						2.159	5.3975	14.159	35.3975	2.159	1.0795	14.159	7.0795
H4	508647	350390.2						2.813	7.0325	14.813	37.0325	2.813	1.4065	14.813	7.4065
H5	508685.9	350454.6						2.08	5.2	14.08	35.2	2.08	1.04	14.08	7.04
H6	508694.4	350526.3						1.395	3.4875	13.395	33.4875	1.395	0.6975	13.395	6.6975
H7	508790.4	350449.8						1.19	2.975	13.19	32.975	1.19	0.595	13.19	6.595
H8	508783.1	350515.4						1.095	2.7375	13.095	32.7375	1.095	0.5475	13.095	6.5475
H9	508857.2	350404.8						0.826	2.065	12.826	32.065	0.826	0.413	12.826	6.413
H10	508882.7	350519						0.766	1.915	12.766	31.915	0.766	0.383	12.766	6.383
H11	508902.2	350605.3						0.595	1.4875	12.595	31.4875	0.595	0.2975	12.595	6.2975
H12	508778.2	350595.6						0.806	2.015	12.806	32.015	0.806	0.403	12.806	6.403
H13	508865.7	350725.6						0.413	1.0325	12.413	31.0325	0.413	0.2065	12.413	6.2065

H14	508707.7	350666.1						0.629	1.5725	12.629	31.5725	0.629	0.3145	12.629	6.3145
H15	508593.5	350611.4						0.876	2.19	12.876	32.19	0.876	0.438	12.876	6.438
H16	508536.4	350555.5						1.204	3.01	13.204	33.01	1.204	0.602	13.204	6.602
H17	508456.2	350533.6						0.911	2.2775	12.911	32.2775	0.911	0.4555	12.911	6.4555
H18	508379.6	350521.5						0.692	1.73	12.692	31.73	0.692	0.346	12.692	6.346
H19	508491.4	350650.3						0.577	1.4425	12.577	31.4425	0.577	0.2885	12.577	6.2885
H20	508389.4	350606.5						0.571	1.4275	12.571	31.4275	0.571	0.2855	12.571	6.2855
H21	508314	350565.2						0.438	1.095	12.438	31.095	0.438	0.219	12.438	6.219
H22	508317.7	350503.2						0.442	1.105	12.442	31.105	0.442	0.221	12.442	6.221
H23	508323.7	350421.8						0.45	1.125	12.45	31.125	0.45	0.225	12.45	6.225
H24	508181.6	350461.9						0.228	0.57	12.228	30.57	0.228	0.114	12.228	6.114
H25	508052.8	350393.9						0.15	0.375	12.15	30.375	0.15	0.075	12.15	6.075
H26	508033.3	350534.8						0.116	0.29	12.116	30.29	0.116	0.058	12.116	6.058
H27	508201	350619.9						0.212	0.53	12.212	30.53	0.212	0.106	12.212	6.106
H28	508299.4	350793.7						0.228	0.57	12.228	30.57	0.228	0.114	12.228	6.114
H29	508487.8	350833.8						0.26	0.65	12.26	30.65	0.26	0.13	12.26	6.13
H30	508400.3	350711						0.375	0.9375	12.375	30.9375	0.375	0.1875	12.375	6.1875
H31	508647	350776.6						0.353	0.8825	12.353	30.8825	0.353	0.1765	12.353	6.1765
H32	509163	350332.2						0.256	0.64	12.256	30.64	0.256	0.128	12.256	6.128
H33	509266.8	350245.7						0.17	0.425	12.17	30.425	0.17	0.085	12.17	6.085
H34	509190.7	350062.3						0.138	0.345	12.138	30.345	0.138	0.069	12.138	6.069
H35	508400	349930.8						0.185	0.4625	12.185	30.4625	0.185	0.0925	12.185	6.0925
H36	508464	349558.8						0.071	0.1775	12.071	30.1775	0.071	0.0355	12.071	6.0355
H37	508299.6	349558.8						0.067	0.1675	12.067	30.1675	0.067	0.0335	12.067	6.0335
H38	507482.9	350207.1						0.044	0.11	12.044	30.11	0.044	0.022	12.044	6.022
H39	507467.4	350380.4						0.042	0.105	12.042	30.105	0.042	0.021	12.042	6.021

H40	507677.6	350676.4						0.05	0.125	12.05	30.125	0.05	0.025	12.05	6.025
H41	507953.5	350860.3						0.077	0.1925	12.077	30.1925	0.077	0.0385	12.077	6.0385
H42	507489.3	351044.2						0.032	0.08	12.032	30.08	0.032	0.016	12.032	6.016
H43	507968.8	351221.6						0.073	0.1825	12.073	30.1825	0.073	0.0365	12.073	6.0365
H44	508584.2	351193.2						0.113	0.2825	12.113	30.2825	0.113	0.0565	12.113	6.0565
H45	508820.7	350963.2						0.197	0.4925	12.197	30.4925	0.197	0.0985	12.197	6.0985
H46	509048.4	351015.8						0.186	0.465	12.186	30.465	0.186	0.093	12.186	6.093
H47	509149.1	351230.4						0.111	0.2775	12.111	30.2775	0.111	0.0555	12.111	6.0555
H48	509370.3	351126.8						0.12	0.3	12.12	30.3	0.12	0.06	12.12	6.06
H49	509796.5	351215.5						0.088	0.22	12.088	30.22	0.088	0.044	12.088	6.044
H50	508232.2	351422.4						0.07	0.175	12.07	30.175	0.07	0.035	12.07	6.035
H51	507581.8	351535.7						0.038	0.095	12.038	30.095	0.038	0.019	12.038	6.019
H52	507029.9	351232.7						0.019	0.0475	12.019	30.0475	0.019	0.0095	12.019	6.0095
H53	508686	352084						0.038	0.095	12.038	30.095	0.038	0.019	12.038	6.019
H54	509421.8	349193.6						0.046	0.115	12.046	30.115	0.046	0.023	12.046	6.023
H55	508333.6	348947.3						0.032	0.08	12.032	30.08	0.032	0.016	12.032	6.016
H56	507491.5	349056.1						0.028	0.07	12.028	30.07	0.028	0.014	12.028	6.014

The short term PC for NO_x is below 10% of the AADST for all Human Health receptors and so the emissions can be classed as insignificant. The long term PC for NO_x is below 1% of the AADLT for all Human Health receptors except for H1 to H23, however the PEC does not exceed the AAD_{LT} at any of these receptors and so the long term emissions of NO_x can also be classed as insignificant.

Habitats assessment using NO_X emissions to air from RTO

An assessment of the potential impacts, on three Local Wildlife Sites within 2 km, of emissions to air of Nitrogen Dioxide has been carried out, the results are as follows.

Habitat emission impact assessment - NO_x																
Habitat	NGR		PC (ug/m3)	NO_2				DDV (m/s)	DDF (ug/m2/s)	Nutrient Nitrogen Deposition			Acid Deposition		
	X	Y		Critical Level ug/m3 (annual mean)	PC as % of Cle (annual)	Critical Level ug/m3 (daily mean)	PC as % of Cle			Clo (Kg N/ha/yr)	NND (Kg N/ha/yr)	PC as % of NND	CLmaxN (Keq/ha/yr)	AD_N	PC as % of AD_N
E1 - Woodland	509689	349277.2	0.0420	30	0.140	75	0.056	0.0030	0.0001	10	0.0121	0.1208	10.77	0.0009	0.0080
E2 - Woodland	509942.6	349451.6	0.0380		0.127		0.051	0.0030	0.0001		0.0109	0.1093	10.77	0.0008	0.0072
E3 - Woodland	510378.6	349578.4	0.0300		0.100		0.040	0.0030	0.0001		0.0086	0.0863	10.97	0.0006	0.0056
E4 - Woodland	509934.7	349229.7	0.0350		0.117		0.047	0.0030	0.0001		0.0101	0.1007	10.77	0.0007	0.0067
E5 - Woodland	510434.1	349491.3	0.0280		0.093		0.037	0.0030	0.0001		0.0081	0.0806	10.97	0.0006	0.0052
E6 - Grassland	510965.2	349217.8	0.0190		0.063		0.025	0.0015	0.0000		0.0027	0.0273	4.71	0.0002	0.0041
E7 - Grassland	510093.2	349003.8	0.0280		0.093		0.037	0.0015	0.0000		0.0040	0.0403	4.71	0.0003	0.0061
E8 - Grassland	511060.3	349499.2	0.0200		0.067		0.027	0.0015	0.0000		0.0029	0.0288	4.71	0.0002	0.0044
E9 - Grassland	511111.8	348801.6	0.0160		0.053		0.021	0.0015	0.0000		0.0023	0.0230	4.71	0.0002	0.0035
E10 - Grassland	511698.4	349190	0.0140		0.047		0.019	0.0030	0.0000		0.0040	0.0403	4.71	0.0003	0.0061
E11 - Woodland	511904.5	349661.7	0.0150		0.050		0.020	0.0030	0.0000		0.0043	0.0432	10.96	0.0003	0.0028
E12 - Woodland	509990.2	348944.3	0.0290		0.097		0.039	0.0030	0.0001		0.0083	0.0834	10.77	0.0006	0.0055
E13 - Woodland	510220	348789.7	0.0240		0.080		0.032	0.0030	0.0001		0.0069	0.0690	8.53	0.0005	0.0058
E14 - Woodland	510549	348647	0.0200		0.067		0.027	0.0030	0.0001		0.0058	0.0575	8.53	0.0004	0.0048
E15 - Woodland	510953.3	348349.8	0.0150		0.050		0.020	0.0030	0.0000		0.0043	0.0432	8.53	0.0003	0.0036

The short and long term PC for NOx, PC for Nutrient Nitrogen Deposition and PC for Acidification from Nitrogen contribute much <100% (predicted to all contribute <1%) of the relative Critical Level or Critical Load at all ecological receptors, and so the emissions can be classed as insignificant.

‘H1 assessment of emissions to air from the existing on-site boilers’ and ‘Combination of emissions to air from existing boilers and RTO – worst case scenario’ which includes potential impacts to human health and ecological receptors

This has not been carried out as a part of this variation application and whilst the scale of the emissions mean that an exceedance at receptors is unlikely, an improvement condition (IC9) which requires that a H1 assessment of all site emissions to air of NO_x (A1-A7, A37 & A38) is submitted to confirm this.

Annex 1: decision checklist
This document should be read in conjunction with the application, supporting information and permit/notice.

Aspect considered	Justification / Detail	Criteria met Yes
Receipt of submission		
Confidential information	A claim for commercial or industrial confidentiality has not been made.	✓
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on commercial confidentiality.	✓
Consultation		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with our Public Participation Statement and our Working Together Agreements. For this application we consulted the following bodies: • Health and Safety Executive (HSE) • Public Health England (PHE) • Local Authority Environmental Health Department The comments and our responses are summarised in the consultation section of this document.	✓
Responses to consultation and web publicising	The web publicising and consultation responses (Annex 2) were taken into account in the decision. The decision was taken in accordance with our guidance.	✓
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application.	✓
The site		
Extent of the site of the facility	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility including discharge points S1 and W1.	✓

Aspect considered	Justification / Detail	Criteria met Yes
	A revised emission to air points plan (Emission points RTO on) which removes emission points now to be redirected to the RTO and includes RTO emission point A38, has been submitted. An 'emergency' emission to air points plan (Emission points RTO off) which includes all current emission points has also been submitted for use in the event of RTO breakdown/malfunction. A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary.	
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation. A full assessment of the application and its potential to affect the Local Wildlife Sites (Evedon Wood, Leasingham Wood and Haverholme Park) has been carried out as part of the permitting process. We consider that the application will not affect the site We have not formally consulted on the application. The decision was taken in accordance with our guidance.	✓
Environmental Risk Assessment and operating techniques		
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory. The assessment shows that, applying the conservative criteria in our guidance on Environmental Risk Assessment, all emissions to air, following the inclusion of a Regenerative Thermal Oxidiser, may be categorised as environmentally insignificant. Please see the Key Issues Section for further information. There will be no increase in other emissions as a result of this variation, and consequently no increase in environmental risk.	✓
Operating techniques	We have reviewed the techniques used by the operator and compared these with the relevant guidance notes.	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit. We, the Environment Agency, have reviewed and approved the Odour Management Plan and consider it complies with the requirements of our H4 Odour management guidance note. We agree with the scope and suitability of key measures but this should not be taken as confirmation that the details of equipment specification design, operation and maintenance are suitable and sufficient. That remains the responsibility of the operator. Emissions of odour cannot be screened out as insignificant. The Environment Agency has therefore assessed whether the proposed techniques are BAT. Please see the Key Issues section for further information. The proposed techniques for priorities for control of odour are in line with the benchmark levels contained in the TGN and we consider them to represent appropriate techniques for the facility. The permit conditions ensure compliance with the following relevant BREF: • The Food, Drink and Milk Industries Emissions to air of NO_x and CO have been screened out as insignificant, and so we agree that the applicant's proposed techniques are BAT for the installation. Please see the Key Issues section for further details.	
The permit conditions		
Updating permit conditions during consolidation.	We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation. The new conditions have the same meaning as those in the previous permit(s). The operator has agreed that the new conditions are acceptable.	✓
Improvement conditions	Based on the information on the application, we consider that we need to impose improvement conditions.	✓

Aspect considered	Justification / Detail	Criteria met Yes
	Improvement condition IC5 has been amended to include a new deadline date of '3 months post V004 issue'. Improvement condition IC8 has been amended to read 'complete' and dated with V004 issue date. Improvement condition IC9 has been included requiring that the operator submits a H1 assessment of NO_x emissions to air from all point sources on site.	
Incorporating the application	We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process. These descriptions are specified in the Operating Techniques table in the permit.	✓
Emission limits	We have decided that emission limits should be set for the parameters listed in the permit. No emission limits have been added, amended or deleted as a result of this variation.	✓
Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified. Monitoring has not changed as a result of this variation	✓
Operator Competence		
Environment management system	There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with our guidance on what a competent operator is.	✓

Annex 2: External **Consultation and web publicising responses**

Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process.

Response received from
Public Health England
Brief summary of issues raised
Environmental Permit application for Tulip Limited, Ruskington Food Manufacturing Installation **Application Number: EPR/UP3332HY/V004** Thank you for forwarding a copy of this application to the Centre for Radiation, Chemical and Environmental Hazards (CRCE) at Public Health England on 19th December 2016. This application is intended to address odorous emissions to air from this installation as well as providing heat for the installation's processes, through the provision of a regenerative thermal oxidiser. Emissions to air of products of combustion from the boiler feeding the proposed regenerative thermal oxidiser have been assessed and do not exceed short or long-term air quality standards. Therefore, based on the information contained in the application supplied to us, Public Health England has no significant concerns regarding the risk to the health of the local population from the addition of this process. This consultation response is based on the assumption that the permit holder shall take all appropriate measures to prevent or control pollution, in accordance with the relevant sector guidance and industry best practice.
Summary of actions taken or show how this has been covered
Although the initial application showed that the combustion emissions from the proposed Regenerative Thermal Oxidiser do not exceed short or long term air quality standards, running the data through our screening tool highlighted that short term emissions of NO_x could potentially cause a significant impact upon human health (PC as a % of AAD). Detailed modelling was requested and supplied by the operator, and assessed by the Environment Agency. The conclusions of this assessment are that emissions of NO_x can be classed as insignificant with regards to impacts to human health and ecological receptors.