

Permitting decisions

Variation

We have decided to grant the variation for McCain Scarborough Manufacturing Site operated by McCain Foods (G.B.) Limited.

The variation number is EPR/BO7732IZ/V006.

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 provides a record of the decision making process. It:

- highlights key issues in the determination
- summarises the decision making process in the decision checklist to show how all relevant factors have been taken into account
- shows how we have considered the consultation responses

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

Read the permitting decisions in conjunction with the environmental permit and the variation notice. The introductory note summarises what the variation covers.

Key issues of the decision

This variation serves to update the permit in relation to a phased refurbishment of the site. In this phase of the refurbishment, the following will occur:

- Improvements and modifications to potato receipt, storage, sorting and preparation processes.
- Removal of the refrigeration storage plant/cold store. In association with this:
 - The related Directly Associated Activity (DAA) and associated point source emissions to air (A14–A21) have been removed from the permit. The description of the Section 6.8 A(1)(d)(ii) activity has been amended to incorporate flash freezing prior to dispatch.
- Replacement and increase in capacity of the two 'fries' lines within the facility.
 - This will lead to an overall change in theoretical capacity at the site from 864 tonnes per day to 1,344 tonnes per day.
- Alteration of the current heating ventilation and air conditioning (HVAC) system. In association with this:
 - The point source emissions to air A22–A42, A44–A49, A51–A52, A54–A55, A70 and A74–A76 have been removed from the permit.

- The point source emissions to air A104–A133 and A136–A146 have been added to the permit.
- A new thermal oxidiser (13.9 MWth) has been added to the permit as a DAA (with new emission point A134 (T03)).
- A new closed loop hot water boiler (9.3 MWth) has been added to the permit as a DAA, with its new emission point A135 (HWB1).
- Removal of the backup boiler.
 - Reference to this boiler (and associated point source emissions to air A12 and A13) has been removed from the permit, including amendment of the steam generation DAA.
- The addition of a new loading bay at the rear of the facility. In association with this:
 - The permit boundary has changed and a new site plan has been included in Schedule 7 of the permit.
- Removal of the release point to groundwater.
- Minor changes to the building layout and configuration.

The applicant applied to include a new listed activity (Section 1.1 A(1)(a)) based on an aggregated thermal input on site of above 50 MW (thermal oxidiser 13.9 MWth; closed loop hot water boiler 9.3 MWth; Beel boiler 17.8 MWth; and two Maxicons at 10.7 MWth each). However, we do not consider that the proposed thermal oxidiser is a combustion plant and therefore it should not be included within this aggregation, which brings the aggregated MWth input of combustion sources to <50 MWth. Therefore, we have not included the proposed listed activity in the permit, but have included a new DAA for the thermal oxidiser and associated closed loop hot water boiler. We consider that the thermal oxidiser is on site with a primary purpose of odour abatement and not to generate energy. All combustion plants on site are natural gas fired.

As part of the permit update, a number of redundant and new emission points comprising roof exhausts/louvres have been amended, as detailed in Table 1 (A1–A3, A56, A57, A58 and A59 have been removed; PE14, BH10 and PR1–PR5 have been added).

Table 1: Administrative changes to emission points based on site changes since last permit issue

Emission Point	Description	Added/Removed
A1-A3 (PH1–PH3)	Packing hall via roof exhaust	Removed
A56 (D13)	Dryer building via roof exhaust	Removed
A57 (D14)	Line 2 dryer via extractor fan	Removed
A58 & A59 (SF1 & SF2)	Sugar flume dewatering VIB via hood with extractor fan	Removed
PE14	Weigher deck exhaust	Added
BH10 (AC01)	Boiler house roof exhaust	Added
PR1–PR5	Potato receiving area roof exhausts	Added

Environmental impacts

Regulated activities can present different types of risk to the environment, these include odour, noise and vibration, accidents, fugitive emissions to air and water, point source releases to air, discharges to ground or groundwater, global warming potential and generation of waste and other environmental impacts. Consideration may also have to be given to the effect of emissions being subsequently deposited onto land

(where there are ecological receptors). The key factors considered for this permit variation application include emissions to air, noise impacts, and odour impacts.

Odour

The applicant submitted an updated Odour Management Plan with their application. Following a Schedule 5 request (22 October 2018), the applicant submitted a revised Odour Management Plan on 21 December 2018. We requested some further minor revisions (via email, 11 February 2019). A final Odour Management Plan in support of the application was submitted on 11 March 2019 (Havers Hill Odour Management Plan; 8 March 2019). We have reviewed the Odour Management Plan for compliance in respect of our H4 Odour Management guidance note.

It should be noted that odour emissions from the site have led to complaints by some (<10) residents in the vicinity in recent years and odour was highlighted as an issue during public consultation (see consultation section below).

The potential sources of odour, factors that influence those emissions and potential receptors are identified in the Odour Management Plan. Sources include the potato peeling plant, frying lines and the effluent treatment plant. The site is surrounded by residential properties, a sports club ground, a school, factories and warehouses.

The Odour Management Plan describes a number of measures towards odour management. General control measures include monitoring and control of processes, an automated site maintenance and operating procedures system, staff training, routine cleaning, defined spillage cleaning procedures and records management. Specific control measures for the potato peeling plant, frying lines and effluent treatment plant are described; those for the potato peeling plant and frying lines are summarised in Table 2 (the effluent treatment plant is not further considered here as no changes to effluent treatment were proposed as part of this variation).

Table 2: Odour control measures for specific plant

Odour source	Specific control measures
Frying lines	<p>Part of this variation comprises the installation of a thermal oxidiser, replacing the existing odour control unit. The thermal oxidiser has been designed to handle the air flow from the production lines (via local air extraction) and under routine use would be operating at around 75% theoretical capacity.</p> <p>If the thermal oxidiser is unavailable the production line would automatically shut down because the thermal oxidiser will be interlinked with a closed loop boiler, which would be unable to supply enough steam to the fry lines for their operation.</p>
Peeling plant	<p>Part of this variation comprises the replacement of the existing peeling lines. The peeling lines use steam to remove peel from the potatoes. The new lines will include flash tanks and water cascade on the exhaust system to capture odour from the process.</p>

The Odour Management Plan includes details on responsibility for the various roles involved in odour management. It also includes details on the way maintenance is controlled through a scheduled maintenance programme. Monitoring is carried out daily using sniff testing, in line with our H4 Odour Management guidance note. The Odour Management Plan details how the data collected are recorded and reviewed. The Odour Management Plan includes a clear description of the processes to follow for complaints and incidents.

We consider that the Odour Management Plan is in line with our H4 Odour Management guidance note. The proposed changes as a result of this variation are unlikely to significantly affect odour levels from present conditions and may lead to an improvement.

Noise

The applicant submitted a combined Noise Impact Assessment and Management Plan with their application. Following a Schedule 5 request (22 October 2018), the applicant submitted a Noise Impact Assessment (Noise Impact Assessment; 19 December 2018) and separate Noise Management Plan on 21 December 2018. We requested some further minor revisions (via email, 2 April 2019). A final Noise Management Plan in support of the application was submitted on 11 April 2019 (Havers Hill Noise Management Plan; 10 April 2019). As an appendix to their Noise Management Plan, the applicant submitted a spreadsheet working document (Appendix B), which includes a noise management inventory and receptor inventory.

It should be noted that noise emissions from the site have led to complaints by some (<10) residents in the vicinity in recent years. This was highlighted as an issue during public consultation (see consultation section below).

Noise Impact Assessment

The Noise Impact Assessment (21 December 2018) submitted by the applicant includes:

- a description of the existing site and proposed upgrade, with identification of the noise sources in relation to the proposed changes, receptors and mitigation measures;
- a summary of consultation undertaken, relevant legislation and guidance;
- the results of a background survey undertaken in January 2017 (while the site was active);
- the results of a background survey undertaken in November 2018 (during a site shutdown);
- the methods and results of a noise modelling study; and
- an evaluation of noise levels during the day and at night.

Noise sources, receptors and mitigation measures

The proposed changes on site as a result of this variation would introduce the following noise sources:

- a new HGV access route and loading bay;
- new fixed mechanical plant, including:
 - 5 plant room extract fans at roof level;
 - 8 plant located on an external platform extension (5 ammonia condensers, 1 oil cooling tower, 1 tunnel pre-cooler and 1 pump); and
 - façade noise break-out via 4 plant room air intake louvres and the plant room opaque façade.

Four local receptors are identified in the Noise Impact Assessment to represent the closest residential areas to the site and proposed changes.

The noise mitigation measures proposed for the installation to represent best available techniques (BAT) include:

- an acoustic timber reflective noise barrier;
- an acoustic louvre on the platform extension; and
- acoustic louvres on the plant room air intake aperture.

Consultation and guidance

The Noise Impact Assessment refers to the Environmental Protection Act 1990, regarding its provision for the control of pollution including noise; BS4142:2014 guidance, for rating and assessment industrial and commercial sound; World Health Organisation guidance, for night noise; BS8233:2014 guidance, for noise mitigation and transmission; ISO9613-2:1996(E) standards, for calculating the attenuation of sound propagating between sources and receptors; and Environment Agency guidance for noise impact assessments involving calculations or modelling.

The applicant consulted with Scarborough Borough Council regarding assessment methodologies and noise limits that could be considered appropriate; without any applicable specific policies or noise limit targets defined by Scarborough Borough Council, they agreed that BS4142:2014 was the most appropriate methodology for the assessment. This is in line with our guidance.

Assessment

The initial Noise Impact Assessment only considered background noise with the factory running (noise survey January 2017). This meant we were unable to consider the effects of the existing factory on noise and how this would change with the proposed variation. We requested a second noise survey, which was conducted when the factory was switched off in November 2018. Both of the noise surveys were carried out in line with BS4142:2014 and BS7445:2003.

BS4142:2014 defines a number of parameters that are used in the assessment of industrial and commercial sound, which include:

- Specific sound level – sound levels at the assessment location due to only the sound source(s) being assessed;
- Rating level – specific sound level plus any adjustment for the characteristic features of the sound, so called ‘acoustic penalties’, such as tonal features (hums, whines), impulsivity (sound switching on an off, such as on a vehicle reversing alarm) and intermittency (an example is if you can notice the sound when it starts and stops and this occurs regularly);
- Ambient sound – totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, near and far, including the specific sound source;
- Residual sound – ambient sound without the specific sound source, or where the specific sound level is so low that it does not affect the overall sound level; and
- Background sound level – sound level that is exceeded by the residual sound level at the assessment location for 90% of a given time interval.

BS4142:2014 assessments for daytime (Table 3) and night time (Table 4) hours are included in the Noise Impact Assessment. The November 2018 survey established the residual sound levels (i.e., ambient sound without the existing factory running as a combined source). The specific noise levels at each receptor in relation to the proposed upgrade (i.e., not including existing noise sources from the site) are included in the Noise Impact Assessment.

Table 3: BS4142 assessment at sensitive receptors during the daytime as carried out by the applicant

	Noise sensitive receptor 1	Noise sensitive receptor 2	Noise sensitive receptor 3	Noise sensitive receptor 4
Background sound level (L_{A90} dB)	44	44	44	44
Specific sound level (L_s) (L_{Aeq} dB)	40	39	36	36
Acoustic feature correction (dB)	3	3	3	3
Rating level	43	42	39	39
Excess over background sound level	-1	-2	-5	-5

Table 4: BS4142 assessment at sensitive receptors during the night time as carried out by the applicant

	Noise sensitive receptor 1	Noise sensitive receptor 2	Noise sensitive receptor 3	Noise sensitive receptor 4
Background sound level (L_{A90} dB)	28	28	28	28
Specific sound level (L_s) (L_{Aeq} dB)	40	39	36	36
Acoustic feature correction (dB)	3	3	3	3
Rating level (dB)	43	42	39	39
Excess over background sound level (dB)	15	14	11	11

The significance of industrial/commercial sound depends on the difference between the rating level and the background sound level. Typically, the greater the difference, the greater the magnitude of the impact. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, while a difference of around +5 dB is likely to be an indication of an adverse impact. The lower the rating level is, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. If the rating level does not exceed the background sound level, this is an indication of a low impact. The applicant's BS4142:2014 daytime assessment (Table 3) indicates a low impact of the proposed changes. At night time, rating levels between 11 and 15 dB above the background sound levels indicate the potential for a significant adverse impact (Table 4), but this is dependent on context. BS4142:2014 requires that the assessment of potential impact takes into account the 'context' in which the sound occurs. This entails having a sufficient understanding of the situation to be rated and assessed, and placing the sound being assessed in context when making conclusions.

Our audit showed that the applicant's BS4142:2014 assessments did not include the current specific noise being generated from operations on the site. We reviewed the consultant's background monitoring when the site is operational and not operational to understand the current sound levels emitted from the site. Based on the consultant's monitoring (January 2017 survey), we understand that the residual noise level is 38 L_{Aeq} dB. We calculated that the proposed absolute ambient level (residual noise + monitored specific + predicted specific) would be between 42 and 43 L_{Aeq} dB and the proposed variation would increase current onsite levels by approximately 1–2 dB. Therefore we consider that the proposed variation is unlikely to be perceptible at receptors over current onsite noise and is unlikely to cause an adverse impact.

Improvement condition

An improvement condition has been included in the permit to assess the impact of operational noise from the installation, validate the impact assessment submitted as part of this variation, and consider if further attenuation and/or management of noise is required in respect of this variation.

Noise Management Plan

A Noise Management Plan should set out the ongoing monitoring, maintenance and feedback arrangements in regard of noise that are in place at a site. The Noise Management Plan refers to:

- Environment Agency H3 part 2 Noise Assessment and Control guidance note;
- Environment Agency, The Food and Drink Sector (EPR 6.10) guidance note; and
- European Commission, Food Drink and Milk Industries BAT Reference (BRef) Document (January 2017).

We have reviewed the Noise Management Plan for compliance in respect of our H3 part 2 Noise Assessment and Control guidance note, and the final draft of the Food, Drink and Milk Industries BRef Document (October 2018).

The Noise Management Plan states the following aims:

- To provide an integrated system which will monitor, manage, control, record and report on noise emissions during operations;
- To establish site attributable noise targets in order to protect sensitive receptors;
- To set out a detailed monitoring scheme to demonstrate compliance with the noise limits; and
- To establish the protocols to be followed in the event of a breach of the noise limits or on receipt of a complaint.

The Noise Management Plan, including Appendix B, satisfies BAT 12 of the Food Drink and Milk Industries BRef, which is to set up, implement and regularly review a noise and vibration management plan as part of the Environmental Management System. The Noise Management Plan does not consider vibration because there are no sources of vibration at the site during normal operation.

Sources and Receptors

Noise sources are identified within Appendix B of the Noise Management Plan, including specific noise levels measured from each plant and their location. The noise sources that will change or be introduced as a result of this variation have been incorporated into Appendix B. These include plant units to the rear of the site and the operation of the loading bay. The contributions of each noise source to the overall emissions from the installation are graded as high, medium and low. The method for assessing and grading noise sources is detailed within the Noise Management Plan and is in line with our guidance.

The Noise Management Plan acknowledges that there are local residents in close proximity to the site that may be impacted by noise during the day and night. It also acknowledges there are nearby businesses and schools who may be impacted by noise during the day. Appendix B of the Noise Management Plan considers grouped receptor locations, their proximity to the installation and the noise sources that may affect them. This follows on from the Noise Impact Assessment, which provides more detail of receptors and specifically considers the impacts on four receptors at locations that may be affected by the proposed changes.

Demonstration of BAT

BAT 13 is to prevent or reduce noise issues using a combination of: (a) appropriate location of buildings, (b) operational measures, (c) low noise equipment, (d) noise control equipment, and (e) noise abatement.

Within Appendix B of the Noise Management Plan, abatement and actions to prevent or minimise each noise source are described, with consideration as to whether they are BAT. With respect to the on-site changes that will occur as a result of this variation, operational measures include:

- HGV Movements: only running engines when necessary, only using white noise sounder on site when moving in reverse, only operating pump when required, and minimisation of loading and unloading time; and
- Plant units to rear of site: regular maintenance and inspection, managed through the Planned Preventative Maintenance Program.

Site operations, policies and procedures at the installation restrict as far as possible operations to daytime hours. Some potential noise sources are shut off during night periods. Site staff are given training and instruction on how to minimise site noise, particularly at night; this includes initial induction training and periodic refresher training.

Noise abatement equipment included in respect of the new noise sources include an acoustic timber reflective noise barrier; acoustic louvre on the platform extension and acoustic louvres on the plant room air intake aperture.

In considering the outcomes of the Noise Impact Assessment alongside the Noise Management Plan, we are satisfied that the above measures meet BAT for the installation.

Monitoring and Recording

Our guidance details that there should be records kept of:

- processes and checks to minimise noise emission from normal operations;
- processes and checks to minimise noise emission from failures and other factors; and
- monitoring and compliance checks.

The Noise Management Plan details the routine noise monitoring that takes place on site, consisting of:

- on-site walk arounds to monitor for noise sources approximately every 4 hours at night. These walk arounds and outcomes (including any corrective actions) are recorded on a spreadsheet. The spreadsheet is reviewed weekly by site management.
- daily off-site noise monitoring (carried out at the same time as odour monitoring). If off-site noise is identified, this is highlighted to the site environment manager verbally by the monitoring staff.

The Noise Management Plan also details a commitment to an annual noise survey that will, wherever possible, be carried out in accordance with BS4142:2014. A review of the noise survey will be made available to the Environment Agency, including survey outcomes and any identified improvement targets.

The Noise Management Plan includes a clear description of the processes to follow for complaints and incidents, including investigation and, where noise complaints are substantiated, routes for remedial action, which are dependent on the nature and source of the noise issue.

The Noise Management Plan is reviewed on an annual basis and in response to operational changes on site; this includes an inspection of noise monitoring reports, complaint logs and summary reports. Routine monitoring results and the outcomes of any substantiated complaints will be used to review the frequency and types of monitoring and assessment of mitigation measures.

We consider that the Noise Impact Assessment and Noise Management Plan are in line with our H3 part 2 Noise Assessment and Control guidance note.

Emissions to air

Human and environmental health risk assessment methodology

A methodology for risk assessment of point source emissions to air, which we use to assess the risk of applications we receive for permits, is set out in our Web Guide and has the following steps:

- describe emissions and receptors;
- calculate process contributions;
- screen out insignificant emissions that do not warrant further investigation;
- decide if detailed air modelling is needed;
- assess emissions against relevant standards; and
- summarise the effects of emissions.

The methodology uses a concept of “process contribution (PC)”, which is the estimated concentration of emitted substances after dispersion into the receiving environmental media at the point where the magnitude of the concentration is greatest. The Environment Agency provides a simple tool for calculating short term and long term PCs, primarily for screening purposes and for estimating PCs where environmental consequences are relatively low. The screening tool is based on the use of dispersion factors. These factors assume worst case dispersion conditions with no allowance made for thermal or momentum plume rise and so the PCs calculated are likely to be an overestimate of the actual maximum concentrations.

To consider the impacts of short term and long term PCs calculated using the initial screening tool, they are compared with environmental quality standards (EQS). Where an EU EQS exists, the relevant standard is the EU EQS. Where an EU EQS does not exist, our guidance sets out a national EQS (also referred to as environmental assessment level (EAL)), which has been derived to provide a similar level of protection to human health and the environment as the EU EQS levels. In a very small number of cases, e.g. for emission of lead, the national EQS is more stringent than the EU EQS. In such cases, we use the national EQS for our assessment. National EQSs do not have the same legal status as EU EQSs, and there is no explicit requirement to impose stricter conditions than BAT in order to comply with a national EQS. However, national EQSs are a standard for harm and any significant contribution to a breach is likely to be unacceptable.

PCs are considered **insignificant** if:

- the **long term** PC is less than 1% of the relevant EQS; and
- the **short term** PC is less than 10% of the relevant EQS.

The **long term** 1% PC insignificance threshold is based on the judgements that:

- it is unlikely that an emission at this level will make a significant contribution to air quality; and
- the threshold provides a substantial safety margin to protect health and the environment.

The **short term** 10% PC insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short term PCs are transient and limited in comparison with long term PCs; and
- the threshold provides a substantial safety margin to protect health and the environment.

Where an emission is screened out in this way, we would normally consider that the applicant's proposals for the prevention and control of the emission to be BAT. That is because if the impact of the emission is already insignificant, it follows that any further reduction in this emission will also be insignificant.

Where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant. For an emitted substance which does not screen out as insignificant based on the PCs, the background concentration of the emitted substance is considered. By understanding the background concentration of the emitted substance, we can determine whether exceedances of the relevant EQS are likely. A second stage of calculations in the screening tool produce the "predicted environmental concentration (PEC)" of the emitted substance; this is the PC plus the concentration of the substance already present in the environment. In this stage of screening, the emission of a substance is considered **insignificant** if:

- the **long term** PEC is less than 70% of the relevant EQS; and
- the **short term** PC is less than 20% of the relevant EQS minus twice the long-term background concentration of that substance.

If an emission cannot be screened out based on either the PCs or the PECs using the screening tool, we require the applicant to submit a full air dispersion model as part of their application for the key pollutants. Air dispersion modelling enables the PC for a pollutant to be predicted at any environmental receptor that has the potential to be impacted by the installation. A detailed audit and review of the applicant's air dispersion modelling, taking background concentrations and modelling uncertainties into account, can then be carried out. Where an exceedance of an EU EQS is identified, we may require the applicant to go beyond what would normally be considered BAT for the installation or we may refuse the application if the applicant is unable to provide suitable proposals. Whether or not exceedances are considered likely, the application is subject to the requirement to operate in accordance with BAT.

If, as a result of reviewing of the risk assessment and taking account of any additional techniques that could be applied to limit emissions, we consider that emissions would cause significant pollution, we would refuse the application.

Habitats risk assessment methodology

In addition to the human and environmental health risk assessment, we specifically consider sites of nature conservation in respect of emissions to air, including:

- Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites within 10 km of an installation; and
- Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs), Local Nature Reserves (LNRs), Local Wildlife Sites (LWSs) and Ancient Woodlands (AWs) within 2 km of an installation.

The emissions are considered in relation to Critical Levels (C_{Le}) for airborne concentrations and Critical Loads (C_{Lo}) for deposition to land from air. C_{Le} have been set for oxides of nitrogen (NO_x) (long and short term), sulphur dioxide (SO_2) (long term), ammonia (NH_3) (long term) and HF (long and short term) to protect vegetation. C_{Le} have also been set to protect lower plants for SO_2 (long term) and ammonia (NH_3) (long term). C_{Lo} have been set for nutrient-N deposition and acid deposition. Similar to the human health risk assessment, we follow an initial screening process, followed by detailed modelling if we are unable to initially screen out pollutant emissions as insignificant. The significance of the emissions are assessed under the following thresholds for long term effects:

- For European habitat sites and SSSIs:
 - If the PC is <1% of the long term C_{Le} and/or C_{Lo} then the emission can be screened out; or
 - If the PEC is <70% of the long term C_{Le} and/or C_{Lo} then the emission can be screened out.
- For Local Wildlife and Conservation sites:
 - If the PC is <100% if the C_{Le} and/or C_{Lo} then the emission can be screened out.

The significance of the emissions are assessed under the following thresholds for short term effects:

- For European habitat sites and SSSIs, if the PC is <10% of the short term C_{Le} (there are no C_{Lo}), then the emission can be screened out;
- For Local Wildlife and Conservation sites, if the PC is <100% of the short term C_{Le} (there are no C_{Lo}), then the emission can be screened out.

These additional assessments may also lead us to include more stringent conditions than BAT. If, as a result of reviewing of the risk assessment and taking account of any additional techniques that could be applied to limit emissions, we consider that emissions would cause significant pollution, we would refuse the application.

Site specific air emissions risk assessment overview

The applicant submitted an Air Quality Impact Assessment (17 July 2018) with their application. The key pollutants considered, in association with the three existing boilers and proposed new thermal oxidiser and closed loop hot water boiler, were nitrogen oxides (NO_x) and carbon monoxide (CO). The combustion plant on site utilise natural gas only, so sulphur dioxide (SO_2) emissions were not of potential concern. Detailed modelling was performed for both NO_x and CO. Within the Air Quality Impact Assessment, the applicant proposed a stack height for the thermal oxidiser of 14.9 m. Following our audit of the Air Quality Impact Assessment (AQMAU-C1710-RP01; 29 November 2018), we requested that the applicant also submit an assessment to demonstrate BAT for the thermal oxidiser stack. The applicant submitted a Stack Height Assessment Memorandum (1 February 2019). Following our audit of the Stack Height Assessment Memorandum (AQMAU-C1771-RP01; 11 February 2019), the applicant agreed to increase the stack height of the thermal oxidiser to 18 m.

Data

The applicant confirmed that the emissions data for the existing and proposed plant were based on design specifications. Volumetric flow rates for all plant were normalised to reference conditions of 273 K and 101.3 kPa. For the existing boilers, the data were normalised to 3% O₂ content and dry gas.

Human and environmental health risk assessment

The detailed CO atmospheric dispersion modelling results for the most impacted human receptors under the relevant short term exposure periods are shown in Table 5. The CO PCs are <10% of the short term EQS and therefore considered insignificant. Although the Air Quality Impact Assessment (17 July 2018) demonstrates the NO₂ EQS is unlikely to be exceeded based on adequate headroom, our audit (AQMAU-C1710-RP01; 29 November 2018) shows that the PCs at the worst affected receptor are high, with the proposed thermal oxidiser contributing around 70% of the total NO₂ emissions. Therefore, we requested that the applicant complete a BAT assessment of stack height for the thermal oxidiser.

The Stack Height Assessment Memorandum (1 February 2019) demonstrates that increasing the thermal oxidiser stack height from 14.9 m to 18 m significantly reduces building downwash effects. Figure 1 demonstrates a noticeable decrease in the overall installation NO₂ PCs (i.e., considering all emission points on site) at receptors with an increase in thermal oxidiser stack height from 12 to 18 m, then a lower rate of decreasing NO₂ PCs at receptors above 18 m. Table 6 shows the results of the detailed NO₂ atmospheric dispersion modelling for the most impacted human and environmental health receptors under both the short term and long term exposure periods with a thermal oxidiser stack height of 18 m. The NO₂ PCs remain >1% of the long term EQS and >10% of the short term EQS (and therefore are not considered insignificant), but there is adequate headroom between the PECs and the long term and short term EQSs. The Stack Height Assessment Memorandum (1 February 2019) also details that to increase the thermal oxidiser stack height above 18 m significantly increases the associated costs (from an additional £10,000 to an additional £600,000). Our audit agrees with these conclusions (AQMAU-C1771-RP01; 21 February 2019).

In summary, all emissions either screen out as insignificant for human health risk or, where they do not screen out as insignificant, they are considered unlikely to give rise to significant pollution. We agree that a thermal oxidiser stack height of 18 m is BAT.

Table 5: Potential impacts on human and environmental health based on CO atmospheric dispersion modelling results considering all emissions from site, using a 14.9 m thermal oxidiser stack height (maximum at most impacted human health receptor)

Most impacted receptor ¹	Averaging period	EQS / EAL µg/m ³	PC µg/m ³	PC % of EQS / EAL
R21	8 hour running mean	10,000	53	0.5
R1	1 hour mean	30,000	61	0.2

1 – Receptors identified in applicant's Air Quality Impact Assessment (17 July 2018), Figure 2 and Table A.3.

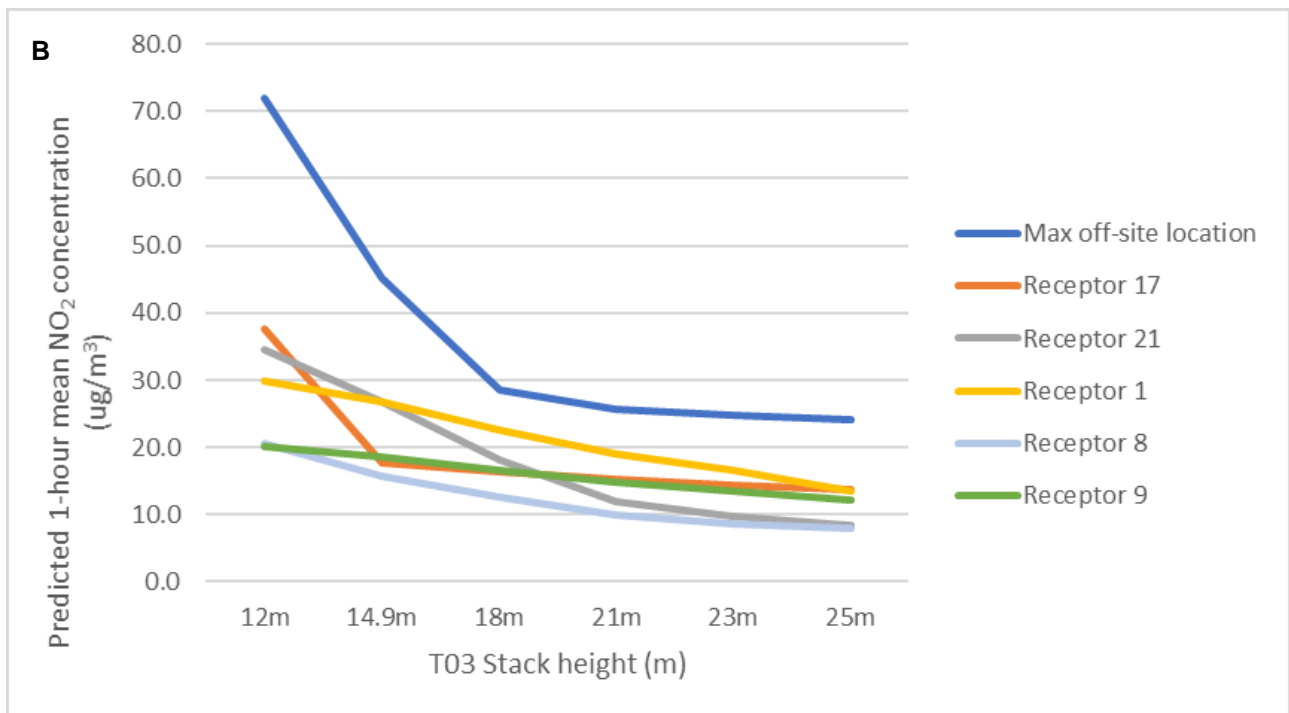
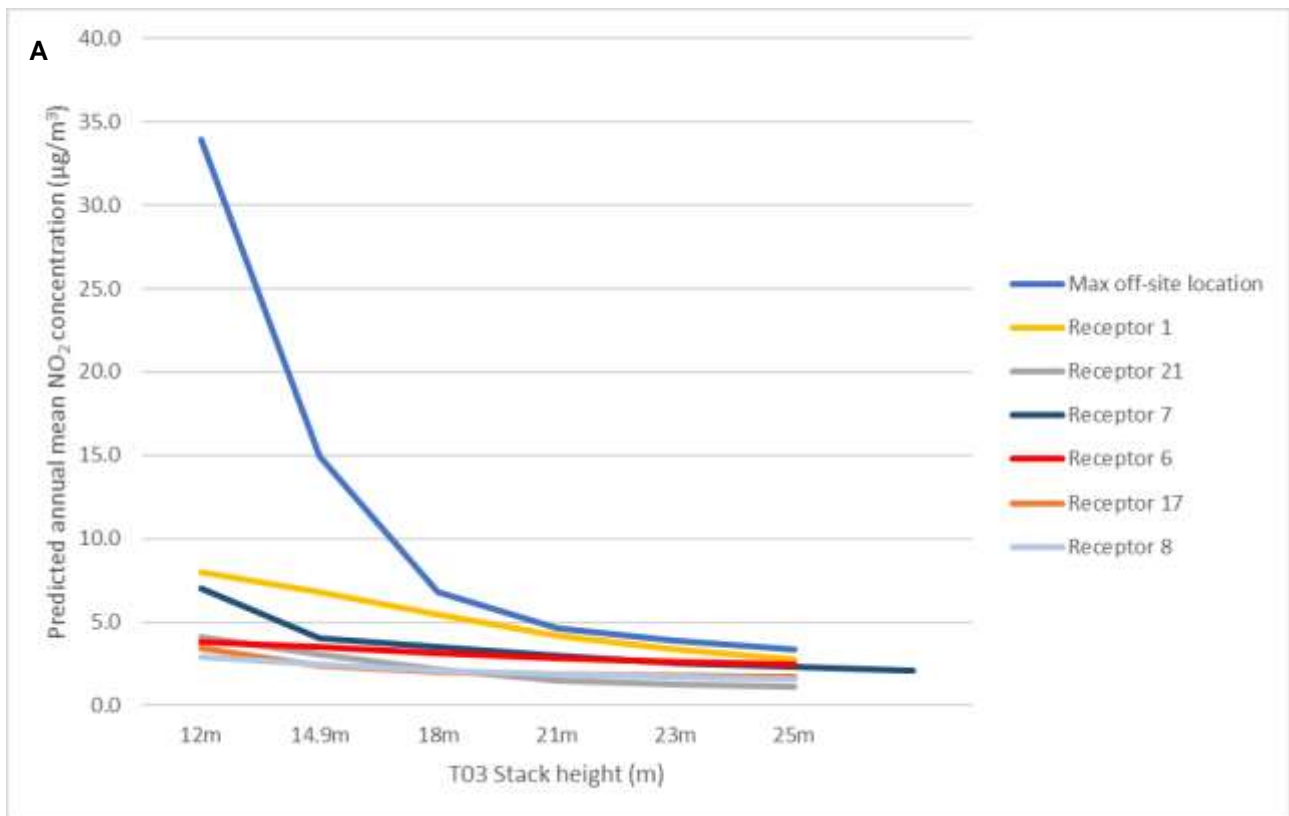


Figure 1: Decrease in predicted (A) annual mean and (B) 1 hour mean NO₂ PCs at human and environmental health receptors considering all emissions from site, with increasing thermal oxidiser stack height (taken from Stack Height Assessment Memorandum; 1 February 2019; Receptor numbers are identified in applicant's Air Quality Impact Assessment; 17 July 2018).

Table 6: Potential impacts on human and environmental health based on NO₂ atmospheric dispersion modelling results considering all emissions from site, using an 18 m thermal oxidiser stack height (maximum at most impacted human health receptor)

Most impacted receptor ¹	Averaging period	EQS / EAL µg/m ³	PC µg/m ³	PC % of EQS / EAL	Background µg/m ³	PEC µg/m ³	PEC % of EQS / EAL	PC % of EQS minus 2 × long term background (Headroom)
R1	Annual mean	40	5.5	13.7	15.4	20.9	52.2	-
R1	1 hour mean	200	22.7	11.3	30.8	-	-	13.4

1 – Receptors identified in applicant's Air Quality Impact Assessment (17 July 2018), Figure 2 and Table A.3.

Habitats risk assessment

The following European habitat site is located within 10 km of the installation:

- Flamborough and Filey Coast potential SPA (pSPA) (3 km).

The following Site of Special Scientific Interest (SSSIs) is located within 2 km of the installation:

- Cayton, Cornelian and South Bays SSSI (1.5 km).

The following wildlife and conservation sites are located within 2 km of the installation:

- The Dell LNR (0.6 km);
- Burton Riggs Gravel Pits LWS (1.9 km);
- Cayton Meadow LWS (1.3 km);
- High Deepdale LWS (1.8 km); and
- Lebberston and Gristhorpe Cliffs LWS (1.9 km).

Assessment of impacts on Flamborough and Filey Coast pSPA

The Air Quality Impact Assessment (17 July 2018) does not consider the impacts of air emissions on the Flamborough and Filey Coast pSPA because at the time of application there was a lack of clarity in our guidance as to the need to assess pSPAs. We agreed that the assessment of impacts at two receptor sites (H2c and H2d) considered in the Cayton, Cornelian and South Bays SSSI are representative of the impacts on Flamborough and Filey Coast pSPA (Figure 2); this was based on their similar location (including consideration of wind direction) and because the features of the Cayton, Cornelian and South Bays SSSI (species-rich grassland and semi-natural woodland) would be more sensitive to NO_x emissions than those of the Flamborough and Filey Coast pSPA (seabird assemblage).

The Stack Height Assessment Memorandum (1 February 2019) modelling, with a stack height of 18 m, shows NO_x PCs >1% of the long term C_{Le} EQS at H2c and H2d (Table 7). Therefore we could not initially screen out these long term PCs as insignificant. The NO_x PECs at H2c and H2d are 40.2% and 39.5%, respectively, of the long term C_{Le} EQS. Therefore we consider there is adequate headroom between the PECs and long term C_{Le} EQS. The short term PCs of the installation to NO_x levels at H2c and H2d are <10% of the short term C_{Le} EQS (Table 7); therefore these emissions have been screened out as insignificant.

The predicted contribution of the installation, with a thermal oxidiser stack height of 14.9 m, at receptor sites H2c and H2d in the SSSI to:

- acid deposition are 0.2% and 0.1% of the relevant C_{Lo}, respectively; and
- nitrogen nutrient deposition are 1.0% and 0.7% of the relevant C_{Lo}, respectively.

The Stack Height Assessment Memorandum (1 February 2019) did not model C_{Lo} with a thermal oxidiser stack height of 18 m. However, it demonstrates slightly reduced NO₂ PCs at H2c and H2d in relation to C_{Le} (Figure 3) and we consider that the PCs to the acid deposition and nitrogen nutrient deposition C_{Lo} would also be slightly reduced and at or below 1% of the relevant C_{Lo} EQSs. Therefore these emissions have been screened out as insignificant.

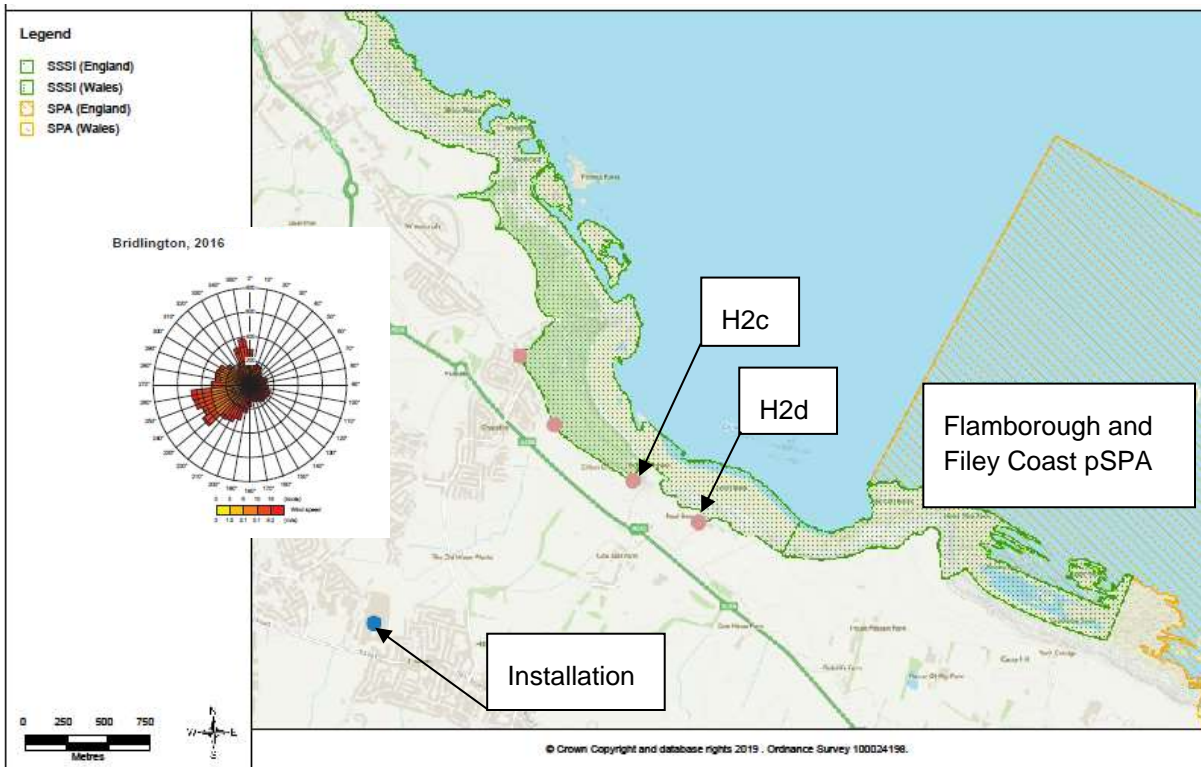


Figure 2: Map showing location of receptor sites within the Cayton, Cornelian and South Bays SSSI assessed by the applicant and wind rose for 2016.

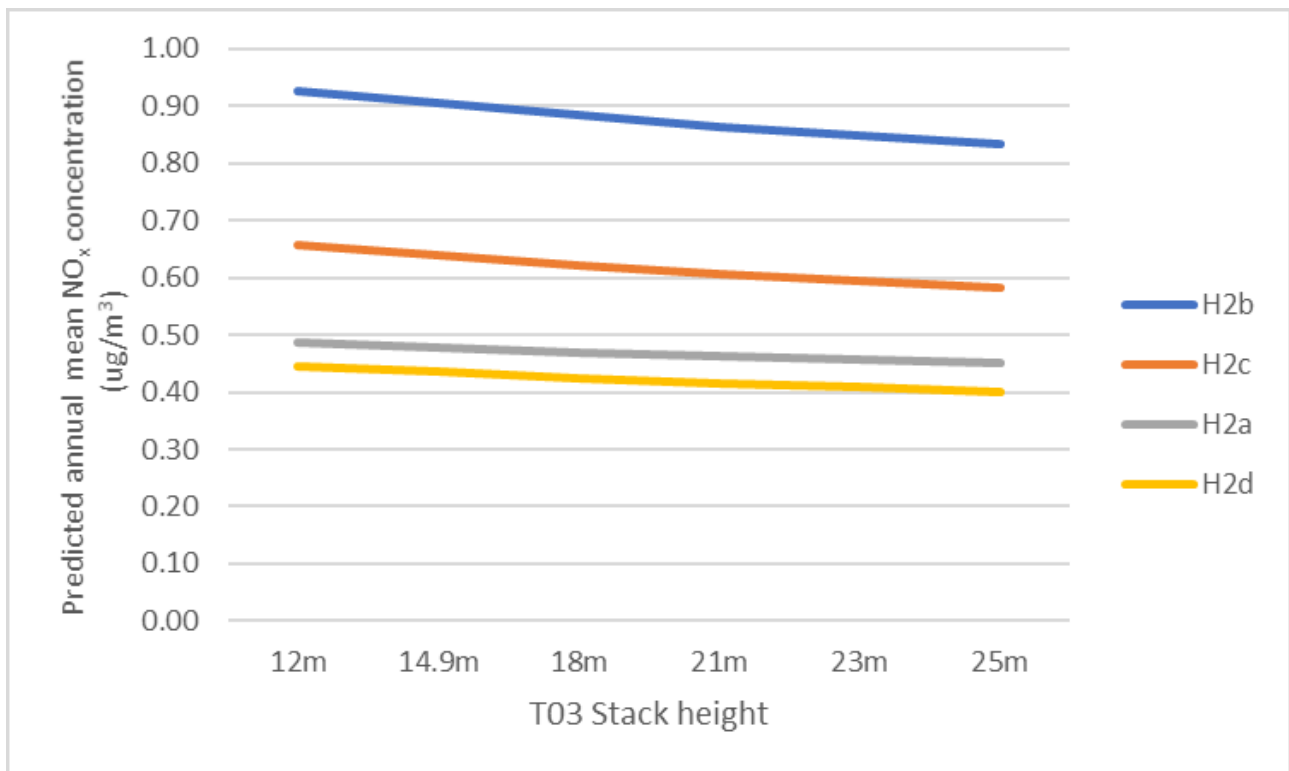


Figure 3: Negligible decrease in predicted NO_x PCs at Cayton, Cornelian and South Bays SSSI considering all emissions on site, with increasing thermal oxidiser stack height (taken from Stack Height Assessment Memorandum; 1 February 2019; H2b, H2c, H2a and H2d are receptor sites within the SSSI).

Table 7: Predicted NO_x PCs at Cayton, Cornelian and South Bays SSSI in relation to critical levels, based on atmospheric dispersion modelling results considering all emissions on site, using an 18 m thermal oxidiser stack height. (Sites H2c and H2d are relevant for Flamborough and Filey Coast pSPA.)

Receptor site (within SSSI)	Averaging period	C _{Le} µg/m ³	PC µg/m ³	PC % of EAL	Background µg/m ³	PEC	%PEC/EQS
2a	Annual mean	30	0.47	1.6	12.0	12.5	41.7
2b			0.88	2.9	11.4	12.3	41.0
2c			0.62	2.1	11.4	12.0	40.2
2d			0.42	1.4	11.4	11.8	39.5
2a	24 hour mean	75	3.25	4.3	24.1	27.3	36.4
2b			4.60	6.1	22.9	27.5	36.6
2c			3.33	4.4	22.9	26.2	34.9
2d			4.45	5.9	22.9	27.3	36.4

Assessment of impacts on Cayton, Cornelian and South Bays SSSI

The Stack Height Assessment Memorandum (1 February 2019) modelling, with a stack height of 18 m, NO_x PCs >1% of the long term C_{Le} EQS at each of the four SSSI receptor sites (Table 7). Therefore we could not initially screen out these long term PCs as insignificant. The NO_x PECs were all <41.7% of the long term C_{Le} EQS. Therefore we consider there is adequate headroom between the PECs and the long term C_{Le} EQS. The short term NO_x PCs of the installation at the SSSI are <10% of the short term C_{Le} EQS (Table 7); therefore these emissions have been screened out as insignificant.

The predicted PCs from the installation, with a thermal oxidiser stack height of 14.9 m, at the SSSI, are <0.3% of the relevant acid C_{Lo} EQSs and could therefore be screened out as insignificant. However, the contribution to nitrogen nutrient deposition is between 0.7% and 1.6% of the C_{Lo} EQSs and therefore we could not initially screen out these as insignificant. The Stack Height Assessment Memorandum (1 February 2019) demonstrates that increasing the thermal oxidiser stack height results in a visible, but negligible, reduction in the predicted NO_x PCs at the Cayton, Cornelian and South Bays SSSI (Figure 3). We consider that the acid deposition and nitrogen nutrient deposition critical loads would also be slightly reduced. Our internal checks have also indicated that, for a stack height of 18 m, the nitrogen nutrient deposition levels would be <1% of the respective C_{Lo} EQSs and can therefore be screened out.

Assessment of impacts on local wildlife and conservation sites

The Stack Height Assessment Memorandum (1 February 2019) does not consider any local wildlife and conservation sites. The Air Quality Impact Assessment (17 July 2018) only considers the Dell LNR and Burton Riggs Gravel Pits LWS. The Dell LNR is considered the worst case scenario for all the wildlife and conservation sites within the screening distance due to its proximity to the installation. The predicted NO_x PCs are <100% of the respective C_{Le} and C_{Lo} and are therefore considered insignificant (Tables 8 and 9).

In conclusion, all emissions either screen out as insignificant or, where they do not screen out as insignificant, they are considered unlikely to give rise to significant pollution with a thermal oxidiser stack height of 18 m, which is considered BAT for this installation.

Table 8: NO_x critical levels based on atmospheric dispersion modelling results for 14.9 m thermal oxidiser stack height at The Dell LNR

Receptor	Averaging period	C _{Le} µg/m ³	PC µg/m ³	PC % of EAL
The Dell LNR	Annual mean	30	1.3	4.3
	24 hour mean	75	16.8	22.4

Table 9: NO_x critical loads based on atmospheric dispersion modelling results for 14.9 m thermal oxidiser stack height at The Dell LNR

Nutrient nitrogen critical loads				
Receptor	Vegetation type	C _{Lo} kg N/ha/yr	PC kg N/ha/yr	PC % of C _{Lo}
The Dell LNR Site H1a	Short	5	0.193	3.9
	Tall	5	0.387	7.7
The Dell LNR Site H1b	Short	5	0.101	2.0
	Tall	5	0.202	4.0
Acid critical loads				
Receptor	Vegetation type	C _{Le} kEqH+/ha/yr	PC kEqH+/ha/yr	PC % of C _{Le}
The Dell LNR Site H1a	Short	4.323	0.014	0.3
	Tall	10.920	0.028	0.3
The Dell LNR Site H1b	Short	4.323	0.007	0.2
	Tall	10.926	0.014	0.1

Application of Best Available Techniques

The applicant submitted a review of the BAT conclusions within the BAT Reference Document on Best Available Techniques (BREF) in the Food, Drink and Milk Industries (January 2017) and their applicability to the installation. The BAT conclusions applicable to this variation have been addressed as summarised in Table 10 (with reference to the most recent publication: BAT Reference Document in the Food, Drink and Milk Industries (October 2018)). In relation to air emissions, the applicant completed a BAT assessment of stack height, as discussed in 'Emissions to Air' above. We accept that the applicant's proposals represent BAT for the installation.

Table 10: BAT conclusions applicable to this variation and how they have been addressed

BAT Conclusion	Scope	How the installation have addressed it
1	Environmental Management System	The site holds ISO14001:2015 and ISO50001:2011, in line with their corporate sustainability policy. Updated Noise and Odour Management Plans have been submitted with this variation.
2	Waste water and waste gas inventories	Waste gases from the HVAC will change through the upgrade of the HVAC system; the system is monitored, including assessments of typical loadings of contaminants to ensure the abatement plant is working within capacity.
6	Energy efficiency	The site holds ISO50001:2011 for energy management. Energy usage is a consideration in all purchasing decisions and heat recovery systems are installed wherever possible.
7	Water consumption reduction	The new fry lines have been designed with consideration for water use and cleaning, including the optimisation of cleaning in place (CIP). Dry cleaning is used as far as practicable within the facility.
8	Cleaning and disinfection chemical reduction or elimination	Implemented through the choice of CIP products, including their recovery and reuse where possible. New plant and equipment have been optimised for CIP to minimise environmental impact.
12 & 13	Noise emissions control	A Noise Impact Assessment and a Noise Management Plan have been submitted. The techniques described are considered BAT for the installation (see above).
14	Odour emissions control	An Odour Management Plan has been submitted. The techniques described are considered BAT for the installation (see above).

Decision checklist

Aspect considered	Decision
Receipt of application	
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 confidentiality.
Consultation/Engagement	
Consultation	<p>The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement.</p> <p>The application was publicised on the GOV.UK website.</p> <p>We consulted the following organisations: Environmental Health, Scarborough</p> <p>The comments and our responses are summarised in the consultation section.</p> <p>Internally, we consulted with groundwater and contaminated land, in respect of the new area of land being included in the permit boundary, and AQMAU, in respect of air and noise impacts. Air and noise impacts are addressed in detail in the key issues section.</p> <p>Groundwater and contaminated land</p> <p>We consulted with the groundwater and contaminated land team to determine if there were any issues with the change in permit boundary to account for. It is considered that, because the new site refurbishment does not include any changes to the existing discharge or abstraction licence, there is no change in the risk to the water environment.</p>
The facility	
The regulated facility	<p>We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 2 of RGN 2 'Defining the scope of the installation', and Appendix 1 of RGN 2 'Interpretation of Schedule 1'.</p> <p>The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.</p>
The site	
Extent of the site of the facility	The operator has provided plans which we consider are satisfactory, showing the extent of the site of the facility including the emission points. The plan is included in the permit.

Aspect considered	Decision
Biodiversity, heritage, landscape and nature conservation	<p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <p>We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process.</p> <p>We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.</p> <p>Please see the key issues section for further information.</p> <p>We have provided our assessment of the application to Natural England for information only. The decision was taken in accordance with our guidance.</p>
Environmental risk assessment	
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility. Including their Air Emissions Risk Assessment, Noise Impact Assessment, Noise Management Plan and Odour Management Plan. See the key issues section for further information.</p> <p>The operator's risk assessment is satisfactory.</p>
Operating techniques	
General operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.</p> <p>The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p>
Operating techniques for emissions that screen out as insignificant	<p>Emissions 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.</p> <p>We consider that the emission limits included in the installation permit reflect the BAT for the sector.</p> <p>See the key issues section for further information.</p>
Odour management	<p>We have reviewed the odour management plan in accordance with our guidance on odour management.</p> <p>We consider that the odour management plan is satisfactory.</p> <p>See the key issues section for further information.</p>
Noise management	<p>We have reviewed the noise management plan in accordance with our guidance on noise assessment and control.</p> <p>We consider that the noise management plan is satisfactory.</p> <p>See the key issues section for further information.</p>

Aspect considered	Decision
Permit conditions	
Improvement programme	<p>Based on the information on the application, we consider that we need to impose an improvement programme.</p> <p>We have imposed an improvement programme to ensure that the operator validates the noise impact assessment submitted with their variation application. See the key issues section for further information.</p>
Emission limits	<p>Emission limit values (ELVs) have been added for the following substances.</p> <p>Oxides of nitrogen (NO and NO₂ expressed as NO₂)</p> <p>Carbon monoxide</p> <p>The ELVs are only applied to the new plant (thermal oxidiser and associated closed-loop hot water boiler).</p> <p>The thermal oxidiser is exempt from the Medium Combustion Plant Directive. The applicants modelled emissions from the thermal oxidiser in line with those set for Chapter IV IED installations. We have set limits in line with the applicant's modelling (see key issues section). We have not set the oxygen reference condition as we do not consider the thermal oxidiser as a combustion source.</p> <p>The new hot water boiler is a Medium Combustion Plant, but is only fired on start-up of the thermal oxidiser system. It is fired for less than 500 hours per year and therefore is exempt from the MCPD limits. Nevertheless we have set limits for the boiler to ensure impacts are insignificant in line with the air quality impact assessment (see key issues section).</p> <p>We made these decisions in accordance with the requirements of the Industrial Emissions Directive and Medium Combustion Plant Directive.</p>
Monitoring	<p>We have decided that monitoring should be added for the following parameters, using the methods detailed and to the frequencies specified:</p> <p>Oxides of nitrogen (NO and NO₂ expressed as NO₂)</p> <p>Carbon monoxide</p> <p>We made these decisions in accordance with the requirements of the Industrial Emissions Directive and Medium Combustion Plant Directive. These monitoring methods are in accordance with the Monitoring of Stack Emissions to Air Technical Guidance Note (M2).</p> <p>Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.</p>
Reporting	<p>We have added reporting in the permit for the following parameters:</p> <p>Oxides of nitrogen (NO and NO₂ expressed as NO₂)</p> <p>Carbon monoxide</p> <p>We made these decisions in accordance with the requirements of the Industrial Emissions Directive.</p>

Aspect considered	Decision
Operator competence	
Management system	There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.
Charging	
Subsistence charging	<p>The subsistence charging has changed as part of this variation. In relation to the Section 6.8 activity, the following Food and Drink components are considered to apply:</p> <p>Abatement (air) – 1 component</p> <p>Abatement (effluent) – 1 component (disposal to sewer)</p> <p>Odour – 1 component (approved OMP)</p> <p>Noise/vibration – 1 component (approved NMP)</p> <p>Air emissions – 1 component (annual mass emissions of ammonia)</p> <p>Resource efficiency – 1 component</p>
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	<p>We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”</p> <p>We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.</p> <p>We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.</p>

Consultation

The following summarises the responses to consultation with other organisations and our notice on GOV.UK for the public, and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section

No comments or response received from the following organisations
<ul style="list-style-type: none">• Environmental Health (Scarborough Council)

Representations from individual members of the public.

Brief summary of issues raised
One member of the public identified strong odour pollution, which impacts their day-to-day activities. They also identified that noise is an increasing issue.
Summary of actions taken or show how this has been covered
<p>We have reviewed the odour management plan (OMP) submitted by the operator. We required that the operator resubmit their OMP to provide:</p> <ul style="list-style-type: none">• clear consideration of the current and projected impacts of odour pollution on the surrounding receptors (with inclusion of waste handling procedures for peel, potato numbs and slivers);• collation of all the odour control measures in one section to allow a systematic review of the measures in place should odour issues occur; and• a housekeeping schedule to demonstrate basic odour control measures are in place. <p>It should be noted that the changes proposed as part of the variation, including installation of a thermal oxidiser, should improve odour emissions.</p> <p>We have reviewed the noise impact assessment (NIA) and noise management plan (NMP) submitted by the operator. We required that the operator resubmit their noise impact assessment and noise management plan to provide:</p> <ul style="list-style-type: none">• further modelling to be carried out to understand the impacts of the site on noise levels in the vicinity; and• greater detail on the noise monitoring that would be carried out by the operator on a day-to-day and annual basis. <p>We have also included an improvement condition to verify the noise modelling carried out by the applicant as part of their variation application.</p> <p>See key issues section for further information on the odour management plan, noise impact assessment and noise management plan. The management plans have been incorporated into the operating techniques table S1.2.</p> <p>We are satisfied that there are measures in place to manage odour and noise emissions from the installation. If odour or noise issues do occur, the following standard permit conditions will address the concerns of the public:</p> <p>3.3 Odour 3.4 Noise and Vibration</p>